

## Curriculum Vitae - Stuart Stephen Papworth PARKIN

Nationality Joint United Kingdom and United States  
Birthdate December 9, 1955  
Current address Trothaer Strasse 17c, 06118 Halle (Saale), Germany

### Education and Employment

#### *The Edinburgh Academy (1971-1973)*

1973 A levels- Physics, Chemistry and Maths (Grade A); S levels- Chemistry and Maths (Grade 1)  
1973 Gold Medal and Academical Club Prize for Dux of School

#### *Trinity College, Cambridge (1974- )*

1974 Entrance Scholarship; 1975 Senior Scholarship; 1976 Science Essay Prize; 1977 Research Scholarship  
1977 B.A. in Physics and Theoretical Physics (Theoretical Physics Option), class I, comprising class I in parts Ia (1975), Ib (1976) and II (1977)  
1979 Research Fellow  
2014 Honorary Fellow

#### *The Cavendish Laboratory, Cambridge (1977-1980)*

1977 Research Student in the Physics and Chemistry of Solids Group, headed by Dr. A.D. Yoffe  
1980 Ph.D. awarded (April)

#### *Laboratoire de Physique des Solides, Orsay, Paris (1980-1981)*

1980 Royal Society European Exchange Fellowship, Laboratoire de Physique des Solides, Université Paris-Sud

#### *IBM Almaden Research Center, San Jose, California (formerly IBM San Jose Research Laboratory)*

1982 IBM World Trade Fellowship  
1983 Adjunct Research Staff Member (January); 1984 Research Staff Member (October)  
1999 IBM Fellow (June)  
2004-2014 Director, IBM-Stanford Spintronic Science and Applications Center (SpinAps); co-directed by Shoucheng Zhang (Physics) and James Harris (Electrical Engineering), Stanford University

#### *Max Planck Institute of Microstructure Physics and Martin Luther University Halle-Wittenberg (2014- )*

2014 Alexander von Humboldt Professor, Martin Luther University Halle-Wittenberg, Halle, Germany  
2015 Director, Max Planck Institute of Microstructure Physics, Halle, Germany, April 1, 2015.  
2016-2019 Managing Director, Max Planck Institute of Microstructure Physics, Halle, Germany

### Degrees

B.A. 1977 Bachelor of Arts: Physics and Theoretical Physics (Theoretical Option) (Admitted: June 24, 1977)  
M.A. 1981 Master of Arts (Admitted: December 12, 1981)  
Ph.D. 1981 Doctor of Philosophy (Admitted: December 12, 1981): Thesis: *Magnetic, Transport & Structural Properties of Intercalated Layer Compounds*: Advisor: Prof. W.Y. Liang

### Honorary Doctorates

- Ehrendoktor (Honorary Doctoral degree), RWTH Aachen University, 2007.
- Honorary Doctorate, Eindhoven University of Technology, 2008.
- Honorary Doctorate, University of Regensburg, 2011.
- Honorary Doctorate, Technische Universität Kaiserslautern, Germany, 2013.

### Research Impact

- h-index (Hirsch factor) = 117<sup>1</sup>; 70,873 citations including 25,527 since 2015 (11-2020).
- Highly Cited Scientist 2018, 2019, 2020 (Physics)
- ~600 published papers
- ~750 invited/plenary/keynote talks at major conferences and workshops
- ~255 invited talks at universities and companies

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<sup>1</sup> Including papers and patents (Google Scholar).

- 120 issued patents

### Elected Member or Fellow, Societies

- Fellow, The Royal Society, London (elected 2000).
- Fellow, The Royal Academy of Engineering (elected 2019).
- Member, National Academy of Sciences (USA) (elected 2008).
- Member, National Academy of Engineering (USA) (elected 2009).
- Fellow, American Academy of Arts and Sciences (elected 2009).
- Honorary Fellow, Indian Academy of Sciences (elected 2012).
- Fellow, TWAS, the World Academy of Sciences (elected 2012).
- Honorary Fellow, Trinity College, Cambridge, UK (elected 2014).
- Member, German National Academy of Sciences Leopoldina (elected 2015).
- Corresponding Fellow, Royal Society of Edinburgh (elected 2016).
  
- Fellow, American Physical Society (elected 1992).
- Fellow, Institute of Electrical and Electronics Engineers (IEEE) (elected 2003).
- Fellow, Institute of Physics, London (2000).
- Fellow, American Association for the Advancement of Science (AAAS) (elected 2003).
- Fellow, Materials Research Society (elected 2008).

### Major Awards and Prizes

- Charles Vernon Boys Prize of the Institute of Physics, presented at the Annual Representatives Meeting, London, May 8, 1991.
- Materials Research Society Inaugural Outstanding Young Investigator Award, presented at the MRS Spring Meeting, Anaheim, California, May 1, 1991.
- Elected Fellow of American Physical Society, November 14, 1992, for "contributions to organic and high temperature superconductivity and magnetism in transition metal multilayers".
- 1994 American Physical Society International Prize for New Materials, (with Prof. Albert Fert and Prof. Peter Grünberg), "For their joint discoveries of giant magnetoresistance effects and long-range exchange interactions in layered magnetic structures leading to new materials, useful for applications", presented at the 21-25 March 1994 meeting of The American Physical Society, Pittsburgh, Pennsylvania, March 21, 1994.
- 1996 Scott Lecturer, The Cavendish Laboratory, University of Cambridge, England.
- 1997 Hewlett-Packard Europhysics Prize for Outstanding Achievement in Solid State Physics for "Discovery and Contribution to the Understanding of the Giant Magnetoresistance Effect in Transition-Metal Multilayers and Demonstration of its Potential for Technological Applications" (with Albert Fert and Peter Grünberg), presented at the 16<sup>th</sup> General Conference of the Condensed Matter Division of the European Physical Society, Leuven, Belgium, August 26, 1997.
- Appointed IBM Fellow by Louis Gerstner, Chairman of the Board and Chief Executive Officer, IBM Corporation, IBM Corporate Technical Recognition Event, Naples, Florida, June 9, 1999.
- 1999-2000 American Institute of Physics (AIP) Prize for Industrial Application of Physics for "Pioneering discoveries and original device demonstrations on giant magnetoresistive (GMR) sensors leading to the realization of GMR read head technology for the magnetic recording industry", presented at the Industrial Physics Forum for Corporate and Academic Leaders, Annandale, New Jersey, October 25, 1999.
- Elected Fellow of The Royal Society of London for Improving Natural Knowledge, May 11, 2000.
- IBM Corporate Award for Giant Magnetoresistive (GMR) Recording Heads, IBM Corporate Technical Recognition Event, Montreal, Canada, June 6, 2000.
- Appointed Fellow of the Institute of Physics, London, September 27, 2000.
- IEEE International Solid-State Circuits Conference (ISSCC) 2000 Jack Raper Outstanding Technology Directions Award, for "A 10ns Read and Write Time Non-Volatile Memory Array Using a Magnetic Tunnel Junction and FET Switch in each Cell", presented at the plenary session, ISSCC 2001, San Francisco, February 5, 2001.
- Distinguished Lecturer, Department of Materials Science and Engineering, M.I.T., Boston, April 3, 2001.
- Distinguished Lecturer, Chinese University of Hong Kong, April 11, 2001.

- Research & Development (R&D) Magazine's 2001 Innovator of the Year Award, presented at R&D Magazine's 39<sup>th</sup> Annual R&D 100 Awards Banquet, the Museum of Science and Industry, Chicago, Illinois, October 4, 2001.
- IBM Corporate Patent Portfolio Award for Magnetoresistive Sensor Based on the Spin-Valve Effect, IBM Corporate Technical Recognition Event, Naples, Florida, June 4, 2002.
- Elected Fellow of the American Association for the Advancement of Science (AAAS) for "seminal contributions to the understanding of giant magnetoresistance and their application to data storage technologies", October 1, 2003.
- Elected Fellow of the Institute of Electrical and Electronics Engineers (IEEE), for "contributions to the application of material science to devices for magnetic storage and memories", November 16, 2003.
- Humboldt Research Award for Senior U.S. Scientists from the Alexander von Humboldt Foundation, Germany, November 2, 2004.
- Nakamura Lecturer, Materials Department, University of California, Santa Barbara, June 3, 2005.
- 2006 Wohlfarth Lecturer, UK Condensed Matter and Materials Physics Conference (CMMP), Exeter, United Kingdom, 19-21 April, 2006.
- Annual Moti Lal Rustgi Memorial Lecture for the 2006-2007 academic year, University of Buffalo, April 6, 2007.
- National Taiwan University Visiting Chair Professor, Taipei, Taiwan, appointed February 2007, awarded by the President of the University, October 9, 2007.
- Distinguished Visiting Professor, the Department of Electrical and Computer Engineering, National University of Singapore, appointed May 2007.
- IEEE Distinguished Lecturer of the IEEE Magnetics Society for 2008, awarded September, 2007, recognized in awards ceremony at Intermag 2009, Sacramento, California, May 4-8, 2009.
- Named honorary visiting professor to the Department of Electrical and Electronic Engineering (EEE) of University College London (UCL), October 1, 2007.
- Awarded the "No Boundaries" Award for Innovation by *The Economist* magazine, in a ceremony at the Science Museum, London, October 18, 2007 (jointly with Albert Fert and Peter Grunberg).
- Appointed first Distinguished Research Chair Professor, Graduate School of Materials Science, National Yunlin University of Science and Technology, Douliou, Taiwan, November 12<sup>th</sup>, 2007.
- Ehrendoktor (Honorary Doctoral degree) of the RWTH Aachen University, awarded in a ceremony on November 23<sup>rd</sup>, 2007. Ehrendoktor awarded in same ceremony together with Dr. Peter Grunberg (KFA, Julich) and Prof. Albert Fert (Université Paris-Sud).
- Elected MRS Fellow in the Inaugural class of Fellows by the Materials Research Society, for "pioneering developments in the field of magnetoelectronics, from basic understanding to commercialization of novel magnetic sensors and memories using spin-engineered magnetic multilayered materials", March 25<sup>th</sup>, 2008.
- Distinguished Lecturer in Quantum Magnetism, Rice University, April 2<sup>nd</sup>, 2008.
- Honorary Doctorate awarded by the Eindhoven University of Technology in the university's annual anniversary festivities, April 25<sup>th</sup>, 2008.
- Elected Member, National Academy of Sciences (NAS), April 29<sup>th</sup>, 2008.
- 2008 IEEE Daniel E. Noble Award "For fundamental contributions to the development of magneto-resistive devices for non-volatile, high density, random access memory" (jointly with Jim Daughton and Saied Tehrani), presented at Intermag, Madrid, Spain, May 7, 2008.
- IBM Corporate Award for "Giant Magnetoresistance in MgO based Tunnel Junctions", awarded by Sam Palmisano, Chairman, President and CEO, IBM Corporation, IBM Corporate Technical Recognition Event, Phoenix, Arizona, May 13<sup>th</sup>, 2008.
- Appointed first Distinguished Visiting Professor, Eindhoven University of Technology, The Netherlands, October 20<sup>th</sup>, 2008.
- Appointed Distinguished Visiting Professor, KAIST, Korea under the Korean Government's WCU (World Class University) Program, November 2008 [initial appointment for 5 years from January 1, 2009].
- Johannes Gutenberg Researcher Award of 2008, awarded by the DFG Graduate School of Excellence, Mainz, Germany, November 25<sup>th</sup>, 2008.
- Elected Member, National Academy of Engineering (NAE), February 6<sup>th</sup>, 2009.
- Racetrack Memory selected as one of the MIT Technology Review's 2009 list of "10 emerging technologies that can change the way we live", February 24<sup>th</sup>, 2009.

- Elected Fellow, American Academy of Arts and Sciences, April 20<sup>th</sup>, 2009.
- Distinguished International Colloquium, to highlight outstanding fundamental and applicable science, organized by the Humboldt Universität and the Science City in Berlin-Adlershof, Germany, April 28, 2009.
- 2009 IUPAP Magnetism Prize and Neel Medal, for outstanding contributions to the science of magnetism, awarded at the International Conference on Magnetism, Karlsruhe, Germany, July 26-31, 2009 (awarded every 3 years). The award citation reads: “For the discovery of long range oscillatory exchange interactions in layered transition metal magnetic structures leading to novel spin-engineered materials and devices and enabling more advanced storage and memory technologies”.
- Second International Material Science Lecture Award, International Centre for Materials Science (ICMS), Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Bangalore, India, presented by Prof. C.N.R. Rao, December 11<sup>th</sup>, 2009.
- Dresden Barkhausen Award 2009<sup>2</sup>, granted by the Material Research Network Dresden (MFD), the European Center for Micro and Nano-materials (EUCEMAN) and the University of Technology Dresden in memorial of Professor Heinrich Barkhausen, presented on January 15<sup>th</sup>, 2010, Dresden, Germany.
- Zernike Institute Colloquium, Zernike Institute for Advanced Materials, University of Groningen, The Netherlands, June 17<sup>th</sup>, 2010.
- Distinguished Visiting Professor, Data Storage Institute, Singapore, September 2010.
- IBM Research – Almaden Grand Challenge 2011 Competition winner – Room Temperature Superconductivity.
- 4th Annual Cheetham Lecturer, Materials Research Outreach Symposium at UCSB, MROP 2011, February 2-3, 2011.
- 1<sup>st</sup> Distinguished DGIST Lecturer, Daegu Gyeongbuk Institute of Science & Technology (DGIST), Daegu, Korea, April 19<sup>th</sup>, 2011.
- Appointed to a Gutenberg Research College Fellowship, presented by the President of the University of Mainz in a ceremony at the University of Mainz, Germany, May 2<sup>nd</sup>, 2011.
- E.W. Guptill Memorial Lecture 2011, Dalhousie University, Halifax, Nova Scotia, Canada, September 29<sup>th</sup>, 2011.
- Honorary Doctorate awarded by the University of Regensburg, conferred at a special awards ceremony on December 20<sup>th</sup>, 2011.
- Elected an Honorary Fellow of the Indian Academy of Sciences, January 1, 2012.
- 2012 David Adler Lectureship Award from the American Physical Society “For inspiring experimental research, lectures and writing in the area of metallic spintronics”, awarded at the 2012 American Physical Society March Meeting, February 27-March 2<sup>nd</sup>, 2012, Boston, Massachusetts.
- Elected Fellow, TWAS, the World Academy of Sciences (formerly, the academy of sciences for the developing world), September 18<sup>th</sup>, 2012.
- 2012 Von Hippel Award from the Materials Research Society, for “pioneering contributions to the science and technology of spintronic materials, particularly in establishing the fundamental foundations of spin-engineered magnetic heterostructures and demonstrating artificial atomically-layered magnetic multilayers for applications in field sensing, magnetic memory and data storage devices”, presented at the MRS Fall meeting, Boston, Massachusetts, November 25-30, 2012.
- XXXIV Krishnan Memorial Lecture (in honor of Sir K.S. Krishnan), National Physical Laboratory, New Delhi, India, March 11<sup>th</sup>, 2013.
- Inaugural Distinguished Lectureship on Innovation: 2013 Moossa J. Arman Physics Colloquium: Science and Innovation, University of California, Los Angeles, May 29<sup>th</sup>, 2013.
- Honorary Doctorate awarded by the Technische Universität Kaiserslautern, Germany, conferred at a special ceremony, June 3<sup>rd</sup>, 2013.
- 2013 Swan Medal of the Institute of Physics (London) "For his discoveries of the underlying physics and of novel device architectures that have established the field spintronics", presented at a ceremony, London, United Kingdom, November 15<sup>th</sup>, 2013.
- Alexander von Humboldt Professorship – International Award for Research, Awarded October 14<sup>th</sup>, 2013.
- 2014 Millennium Technology Prize (worth 1,000,000 Euros), Technology Academy Finland, announced April 9<sup>th</sup>, 2014, presented by the President of the Republic of Finland, Helsinki, Finland, May 7<sup>th</sup>, 2014.

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<sup>2</sup> The Dresden Barkhausen Award is granted for major achievements in applied research and development on interdisciplinary topics that include Physics, Materials Engineering, and Electrical Engineering. This research shall either open new potential applications or is already applied in current products. The award is announced world-wide and it includes a prize money of 10,000 Euro.

- Elected Honorary Fellow, Trinity College, Cambridge, United Kingdom, November 2014.
- Sir Gareth Roberts Memorial Lecture, Departments of Engineering and Physics, Durham University, Durham, United Kingdom, January 29<sup>th</sup>, 2015.
- Elected Member, German National Academy of Sciences Leopoldina, March 2015.
- 11<sup>th</sup> C.K Majumdar Memorial Lecture, S.N Bose National Centre for Basic Sciences, Kolkata, India, June 12<sup>th</sup>, 2015.
- European Research Council Advanced Grant- SORBET, May 2015, (2015-2020).
- Inaugural Balázs Gyórfy Colloquium, University of Bristol, United Kingdom, February 15<sup>th</sup>, 2016.
- Elected Corresponding Fellow, Royal Society of Edinburgh, March 8<sup>th</sup>, 2016.
- Annual Distinguished Lecture, Helmholtz Center, Berlin, Germany, November 21<sup>st</sup>, 2016.
- 7th Annual Carr Lecturer, University of Maryland, College Park, Maryland, February 28<sup>th</sup>, 2017.
- 2018 Highly Cited Researcher (Clarivate Analytics), October 2018.
- Tykoniner Memorial Lecture, ECE, University of Illinois at Urbana-Champaign, February 14<sup>th</sup>, 2019.

### Fellowships and Professorships

- Research Fellowship, Trinity College, Cambridge, U.K. (1979-1985).
- Royal Society European Exchange Fellowship, Université Paris-Sud, France (1980-1981).
- IBM World Trade Fellowship, San Jose, California (1982).
- Visiting Professor, Université Paris-Sud (Summer 1988).
- Consulting Professor, Applied Physics Department, Stanford University, September 1, 1997 – August 31, 2015.
- Distinguished Visiting Professor, the Department of Electrical and Computer Engineering, National University of Singapore, appointed May, 2007 - .
- National Taiwan University Visiting Chair Professor, Taipei, Taiwan, appointed February 2007, awarded by the President of the University, October 9, 2007 - .
- Distinguished Research Chair Professor, Graduate School of Materials Science, National Yunlin University of Science and Technology, Douliou, Taiwan, November 12<sup>th</sup>, 2007 - .
- Distinguished Visiting Professor, Eindhoven University of Technology, The Netherlands, October 20<sup>th</sup>, 2008 - 2016.
- Distinguished Visiting Professor, KAIST, Korea, part of the Korean Government's WCU (World Class University) Program, 2009-2013.
- Honorary Professor of University College London, United Kingdom, appointed June 25, 2009 [initial appointment for 5 years to June 24, 2014].
- Visiting Professor, NUS Nanoscience & Nanotechnology, March 1, 2014 – February 23, 2018.

### Miscellaneous Honors

- Papers, "Bulk Superconductivity at 125 K in  $Tl_2Ca_2BaCu_3O_x$ ", by S.S.P. Parkin *et al.*, Phys. Rev. Lett. **60**, 2539 (1988), and " $Tl_1Ca_{n-1}Ba_2Cu_nO_{2n+3}$  ( $n=1,2,3$ ) - A New Class of Crystal Structures Exhibiting Volume Superconductivity at up to  $\sim 110$  K", by S.S.P. Parkin *et al.*, Phys. Rev. Lett. **61**, 750 (1988), reported in the Hot Papers section of the Scientist, May 15, 1989, page 15, as two of the most heavily cited papers in Physics within the year following publication.
- Paper, "Oscillations in Exchange Coupling and Magnetoresistance in Metallic Superlattice Structures: Co/Ru, Co/Cr and Fe/Cr", by S.S.P. Parkin, N. More and K.P. Roche, Phys. Rev. Lett. **64**, 2304 (1990), one of the top ten most widely referenced papers in May/June 1991 (2nd), November-December 1991 (5th), January-February 1992 (7th) and March-April 1992 (3rd), according to statistics gathered by the Institute for Scientific Information, (published in Science Watch).
- "Oscillatory Magnetic Exchange Coupling through Thin Copper Layers", S.S.P. Parkin, R. Bhadra and K.P. Roche, Phys. Rev. Lett. **66**, 2152 (1991), one of the top ten most widely cited papers in physics in July-August period in 1992 according to statistics gathered by the Institute for Scientific Information.
- Letter of congratulations from the President of the United States of America, Bill Clinton, on the occasion of receipt of the American Physical Society International Prize for New Materials, March 18, 1994.
- 6<sup>th</sup> most highly cited author in the Physical Sciences, 1990-1996 (Science **278**, 1021, 7 November 1997, according to the Institute for Scientific Information, published in ScienceWatch, Nov/ Dec 1997); 6 high-impact papers with 2,328 citations in total and 388 citations on average per paper (2<sup>nd</sup> highest of all authors).
- 65<sup>th</sup> most cited physicist worldwide for the period 1981-June 1997, ranked by total citations (Institute of Scientific Information, February 1998).

- Named as one of “50 R&D Stars to Watch”, Industry Week Magazine, page 47 (December 21, 1998).
- Nominated by peers as Centennial Lecturer of the American Physical Society (in celebration of the centennial of the APS March 1999).
- Invited to attend the National Medal of Technology Awards dinner at the National Building Museum, Washington at which IBM was awarded the National Medal of Technology by President Bill Clinton for 40 years of IBM leadership in the development and commercialization of data storage technology, December 1, 2000.
- Paper entitled “Giant tunneling magnetoresistance at room temperature with MgO(100) tunnel barriers”, S.S.P. Parkin *et al.* Nature Materials **3**, 862 (2004), 4<sup>th</sup> most highly cited paper in physics, May 2006 (Institute for Scientific Information).
- Profiled in a special edition of EETimes on “Great Minds, Great Ideas”, as one of 29 Innovators who have had a significant impact on industry, December 5, 2005. Article about me entitled “Putting a new spin on storage”.
- Fellow for life, World Technology Network: Finalist for 2006 WTN Award for IT-Hardware, November 2006.
- Paper entitled “Giant tunneling magnetoresistance at room temperature with MgO(100) tunnel barrier” by S.S.P. Parkin *et al.*, Nature Materials **3**, 862 (2004), 2<sup>nd</sup> most highly cited paper in Physics for the period May-June 2006, according to Thomson Scientific Hot Papers Database, Science Watch, page 6, 11/12, 2006.
- Nature Material’s 5<sup>th</sup> Anniversary celebration highlights my paper “Giant tunneling magnetoresistance at room temperature with MgO(100) tunnel barrier” by S.S.P. Parkin *et al.*, Nature Materials **3**, 862 (2004), as one of the 10 most influential articles since the inception of the journal (September 2007).
- Named one of “10 unsung heroes of modern technology” by techradar.com, November 10, 2008 [<http://www.techradar.com/news/world-of-tech/10-unsung-heroes-of-modern-technology-483430>]
- Youtube video entitled “IBM moves closer to new class of memory” which describes my Racetrack Memory concept viewed ~110,000 times (+~25,000 times on a related bootlegged Youtube video) as of February, 2009. [<http://www.youtube.com/watch?v=dJf3z9AfiVM> and <http://www.youtube.com/watch?v=zIjKIdMdTGY&feature=related>].
- Best Lecturer Award, PASPS V, “Advanced School on spintronics and quantum information processing”, Sao Carlos, Sao Paulo State, Brasil, November 1-5, 2010: voted “Best Lecturer of the School” by the participating students.

### Boards/Journals/Committees

- Member of a twelve-person Department of Energy Council of Material Sciences panel on "Magnetism at Surfaces and Interfaces" to prepare a report on the current status and future opportunities for research in this area, 1989 (report published J. Mat. Res. June 1990).
- Member, Working Group on Surface and Interface Science, Workshop on Scientific Opportunities at Future Spallation Neutron Sources, Argonne National Laboratory, May 13-16, 1993 (report published February 1994).
- Member, Advisory board of the Journal of Physics: Condensed Matter, January 1993 - December 1996.
- Associate Editor, Materials Letters, June 1993 – February 2006.
- Panelist, Physics 2 Panel, Long-Term Research Grants Program for the International Science Foundation (ISF), (Soros Foundation) Washington, D.C., June 6-7, 1994.
- Member, Committee on Application of Physics, American Physical Society, December 1996- January 1999.
- Elected Member, International Advisory Committee (IAC) of the International Conference on Magnetic Films and Surfaces (ICMFS), October 28, 1997.
- Member, International Advisory Committee, Center for Nanospinics of Spintronic Materials, Korean Advanced Institute of Science and Technology, Taejon, Korea.
- Member, Advisory Board, Journal of Korean Magnetism Society.
- Member, International evaluation panel for the mid-term review and the evaluation of new proposals of the thematic FOM programme "Physics of electronic and magnetic structures and devices", Leiden, The Netherlands, October 7-9, 2001.
- Meeting Co-Chair, Materials Research Society 2002 Fall Meeting, December 2-6, 2002.
- Member, International Expert Team to evaluate proposals to the International Joint Ventures Fund of the Canadian Foundation for Innovation, in the area of nanotechnologies and nanodevices, Toronto, Canada, May 21, 2002.
- Elected Member-at-Large, Division of Condensed Matter Physics, American Physical Society, November 2001 for 3 year term beginning March 2002.
- Elected At Large Member of the Council of the Gordon Research Councils, January 1, 2003- December 31, 2005.

- Co-Editor-in-Chief, with Prof. Kronmueller, Max-Planck-Institut für Metallforschung, Stuttgart, five volume series of books on “Modern magnetism and magnetic materials”, published by John Wiley & Sons, London, July 2007.
- Member, Advisory Board, London Centre for Nanotechnology, UCL and Imperial Colleges, London, UK.
- Member, American Physical Society Selection Committee for the James C. McGroddy Prize, 2003 and 2004.
- Member, Editorial Advisory Board, Superlattices and Microstructures, October 2003.
- Member, Advisory board, Materials Research Science and Engineering Center (MRSEC), University of Minnesota, September 2004.
- Member, Technical Advisory Board, Translucent.
- Member, Memory Committee, International Reliability Physics Symposium (IRPS) 2005.
- Member, University of Chicago committee to review the Materials Science Division, Argonne National Laboratory, February 2006.
- Member, National Research Council (NRC) Committee to review the National Science Foundation (NSF) materials research centers: invited by the National Academy’s NRC’s Solid State Sciences Committee to conduct an assessment of and outlook for the NSF materials research centers (MRSEC) program in its 10<sup>th</sup> year. This study reviewed the impact of the centers and evaluated their role for advancing research in the future. The committee met over an ~18 month period and a final report was published in July 2007.
- Member, International Editorial Board, Journal of Magnetism, The Korean Magnetism Society.
- Appointed Editor Board Member, Functional Materials Letters, January 1, 2008- December 31, 2010.
- Appointed Board Member, Editorial Advisory Board of Advanced Materials, April 2008.
- Elected member-at-large of the Gordon Research Conferences Council for a term of service from January 1, 2009 to December 31, 2011.
- Elected Member, Administrative Committee of the IEEE Magnetism Society, three year term of service from January 1, 2010.
- Appointed Member of the Scientific Advisory Board of the IFW Dresden, Germany, January 2010.
- Member, International Advisory Committee, Moscow International Symposium on Magnetism (MISM-2011), August 21-25, 2011, Moscow. Russia.
- Appointed Member, Standing Committee on Technology Insight- Gauge, Evaluate, and Review (TIGER), National Research Council, National Academies (USA), September 29, 2009- May 30, 2012.
- Appointed Member, Condensed Matter and Materials Research Committee (CMMRC), Board on Physics and Astronomy (BPA), Division on Engineering and Physical Sciences (DEPS), National Research Council (USA), National Academies, for a three-year term from July 30, 2010 and ending June 30, 2013; reappointed for 2<sup>nd</sup> 3-year term to June 30, 2016.
- Member, International Advisory Committee, Korean Magnetic Society, appointed January 2011.
- Appointed Editor-in-Chief, SPIN, a new international journal to be published by World Scientific from 2011.
- Appointed Member, Advisory Board of the London Centre for Nanotechnology, London, United Kingdom, February 23, 2011.
- Appointed Member, International Advisory Board, Winton Programme for the Physics of Sustainability, The Cavendish Laboratory, University of Cambridge, United Kingdom, July 1, 2011 to June 30, 2013, reappointed for 2<sup>nd</sup> term to 2015, reappointed 3<sup>rd</sup> term to 2019.
- Appointed Member, Committee on Societal Benefits from Condensed Matter and Materials Research, National Research Council (USA), December 6, 2011- May 31, 2012.
- Member, APS 2013 Adler Award Selection Committee.
- Member, International Advisory Committee, 8th International Symposium on Metallic Multilayers (MML2013), Kyoto, Japan, May 19-24, 2013.
- Member, International Advisory Committee, International Conference on Nanoscale Magnetism (ICNM-2013), Istanbul, Turkey, September 1-7, 2013.
- Member, International Advisory Committee, Donostia International Conference on Nanoscale Magnetism and Applications (DICNMA), San Sebastián, Spain, September 9-13th, 2013.
- Elected Member of the Electorate Nominating Committee (ENC) of the Section on Physics, American Association for the Advancement of Science, in annual election, to a 3 year term from February 21, 2012 - February 16, 2015.
- Member, Steering Committee, “Quantum properties of semiconductor nanostructures”, Joint project between University College London, Royal Holloway-University of London, and University of Cambridge, PI: Michael Pepper, October 2012-2017.
- Member, Editorial Board, APL Materials, February 2013-.

- Member, International Advisory Board, International Conference on “Novel Non-volatile Inorganic Memory Devices: materials, concepts and applications”, 6th Forum on New Materials, CIMTEC 2014, Montecatini Terme, Tuscany, Italy, June 15-20, 2014.
- Member, International Advisory Committee, 4th International Conference on Superconductivity and Magnetism- (ICSM2014), Antalya, Turkey, April 27<sup>th</sup> – May 2<sup>nd</sup>, 2014.
- Appointed Chair, TWAS Membership Advisory Committee in Physics for the three-year term, 2013-2015, March 18, 2013.
- Member, Editorial Board, IOP Translational Materials Research (TMR), September 2013- December 31st, 2018.
- Member, Advisory Board, Spin Phenomena Interdisciplinary Center (<http://www.spice.uni-mainz.de/>), University of Mainz, Germany, April 2014.
- Member, Advisory Board Member - 15th IEEE International Conference on Nanotechnology 2015, Rome, Italy, July 27-30, 2015.
- Member, International Evaluation Panel (IEP), Competitive Research Programme (CRP), National Research Foundation (NRF) of Singapore, October 1<sup>st</sup>, 2014 to September 30<sup>th</sup>, 2017, reappointed to 2<sup>nd</sup> term, 10-1-2017 to 12-31-2020, reappointed to 3<sup>rd</sup> term, 1-1-2021 to 12-31-2022.
- Member, Executive Advisory Board, Advanced Electronic Materials (Journal), appointed 7-11-2014.
- Member, International Advisory Board, International Conference on Magnetic Materials and Applications (ICMAGMA-2015), Hyderabad, India, December 2-4, 2015.
- Member, Advisory Board, Quantum Matter Institute, University of British Columbia, Vancouver, Canada, February 2015-.
- Elected Member, Electoral Nominating Committee, 2015 Section on Industrial Science and Technology, American Association for the Advancement of Science, for the period February 16, 2016 – February 18, 2019, December 15, 2015.
- Associate Editor, Handbook of Spintronics, published by Springer (2016).
- Member, International Advisory Board, 21<sup>st</sup> International Conference on Magnetism, ICM2018, San Francisco, July 15-20, 2018.
- Member, JEMS2018 National Advisory Committee, Mainz, Germany, September 2018.
- Member, International Advisory Committee, International Conference on Magnetic Materials and Applications (ICMAGMA - 2018), National Institute of Science Education and Research (NISER) Bhubaneswar, Odisha, India, December 9-13, 2018.
- Member, European Research Council (ERC) Synergy Grant panel member, 2018-2021.
- Member, Organizing Committee, “Workshop for Topological Quantum Information”, Shanghai, China (November 19-20, 2018), a satellite meeting of 2018 QMS (November 15-17, 2018), and opening ceremony of the “Shoucheng Zhang Lab for Topological Quantum Physics, Shanghai”.
- Distinguished member of the Academic Advisory Board of the Beijing Academy of Quantum Information Sciences (BAQIS), Beijing, China, December 2018-.

#### Organizer/Chairman Conferences, Review Panels

- Joint Organizer with R.F.C. Farrow, P.J. Dobson, J.H. Neave and A.S. Arrott, of a N.A.T.O. Advanced Research Workshop on "Thin Film Growth Techniques for Low-Dimensional Structures", September 15-19, 1986, Brighton, United Kingdom. Proceedings published by Plenum Press, 1987.
- Member, Advisory Panel, Workshop on "Thin Film Materials for Information Storage", Stanford University, February 2, 1990.
- Chairman, Symposium on Magnetic Films and Surfaces, MRS Spring Meeting, Anaheim, California, April 29-May 3, 1991 - principle organizer, proceedings editor, obtained grant for major funding of symposium from Office of Naval Research.
- Co-Organiser, focused session on "Magnetic Films, Multilayers and Interfaces", American Physical Society March Meeting, Indianapolis, Indiana, March 16-20, 1992.
- Member, Program Committee, International Magnetism Conference (Intermag'92), St. Louis, Missouri, April 13-16, 1992.
- Member, Scientific Committee, Symposium on Magnetic Ultra Thin Films, Multilayers and Surfaces, Lyon, France, September 7-10, 1992.
- Member, Peer Review Panel on "Magnetic Properties", Materials Science Division, Department of Energy's Office of Basic Energy Sciences, Bethesda, Maryland, February 9-11, 1993.
- External examiner, Ph.D. Thesis of S.J. Blundell, University of Cambridge, Cambridge, England, December 17, 1993.



- Member, International Program Committee, International Symposium on Theoretical Physics, "Kourovka-94": "Magnetic Multilayers and Low-Dimensional Magnetism", Ekaterinburg, Russia, February 28- March 6, 1994.
- Invited attendee and reviewer, U.S. Department of Energy, Division of Materials Science, "Workshop on Nanoscale Materials for Energy Applications", Lawrence Berkeley Laboratory, Berkeley, California, April 25, 1994.
- Member, International Advisory Board, Symposium on Magnetic Ultrathin films, Multilayers and Surfaces, Düsseldorf, Germany, 29 August - 2 September 1994.
- Chairman, Opening of Conference and First Session on "Giant Magnetoresistance", International Conference on Magnetic Films and Surfaces, Dusseldorf, Germany, August 29- September 2, 1994.
- "Opponent" at public defense of the Ph.D. Thesis of Vladislav Korenivski, Royal Institute of Technology, Stockholm, Sweden, February 10, 1995.
- Advisor, Workshop on Nanoscale Materials for Energy Applications, Lawrence Berkeley Laboratory, Berkeley, California, February 26, 1995.
- Invited speaker, Press Conference, Materials Research Society, San Francisco, April 17, 1995.
- Chairman, 1st Gordon Conference on Magnetic Nanostructures, Irsee, Bavaria, Germany, September 17-22, 1995; applied to the Gordon Research Conferences to start this new Gordon Research Conference, solicited support from magnetism community, organized meeting and program and obtained financial support from ONR and IBM.
- Co-Chairman, Colloquium on "Magnetic Ultrathin Films, Multilayers, and Surfaces", European Materials Research Society Spring Meeting, Strasbourg, France, June 4-7, 1996.
- Member, International Advisory Board, Symposium on "Magnetic Ultrathin Films, Multilayers and Surfaces", 1991-present.
- Member, International Advisory Committee, International Conference on the Physics of Transition Metals, ICPTM-96, Osaka, Japan, September 1996.
- Guest editor, IBM Journal of Research and Development, Issue on "Giant Magnetoresistance, Oscillatory Coupling and Related Studies", Volume 42.1, January 1998.
- Member, Program Committee, 2<sup>nd</sup> Gordon Conference on Magnetic Nano-Structures, January 1998.
- Member, Review Panel, FOM (Fundamenteel Onderzoek der Materie) programme 'Physics of electronic and magnetic structures and devices', Leiden, The Netherlands, February 14-16, 1999.
- Invited speaker, Press Conference on Magnetolectronics, American Physical Society Centennial March Meeting, Atlanta, Georgia, March 24, 1999.
- Chairman and organizer, Symposium on Patterned Magnetic Structures and Magnetolectronics, Materials Research Society Spring Meeting, San Francisco, California, April 5-9 1999.
- Discussion Leader, 3<sup>rd</sup> Gordon Research Conference on Magnetic Nanostructures, Ventura, California, February 13-18, 2000.
- Member, IEDM 2000 (International Electron Devices Meeting) Panel on Emerging Technologies- Single Electron Transistors and Alternative Memories, San Francisco, December 11-13, 2000.
- Proposer and co-organizer of 1<sup>st</sup> Almaden Institute Meeting on "Grand Challenges in Nanotechnology", IBM Almaden Research Center, San Jose, California, April 23-25, 2001.
- Member, International Advisory Committee of the International Symposium on Metallic Multilayers (MML'01), Aachen, Nordrhein-Westfalia, Germany, June 24-29, 2001.
- Proposer and principal organizer, IBM Almaden Innovation Days meeting, San Jose, California, May 16-22, 2003.
- Panel member, DARPA Spins-in-Semiconductors (SpinS) special Workshop on exploring the possibilities of a program beyond SpinS, Santa Monica, California, October 17, 2003.
- Member, International Advisory Committee, ISAMT'03 (International Symposium on Advanced Magnetic Technologies), Taipei, Taiwan, November 13 ~ 16, 2003.
- Member, Organizing Board, 1st Joint International Nanotechnology/ Nanofabrication Conference, Miami, Florida, February/ March, 2004.
- Member, International Advisory Committee for the Metallic Multilayers Conference (MML '04), Boulder, Colorado, June 2004.
- Chairman and Organizer, SpinAps Retreat, a SpinAps International Workshop/Retreat, organized jointly with Stanford University, Asilomar Conference Center, Pacific Grove, California, July 23-25, 2004.
- Member, Advisory board, Nanoscale Devices and System Integration, NDSI 2005, Houston, Texas, April 4-6, 2005.

- Symposium Chair, “Materials Physics at Interfaces”, 2005 ICMAT (International conference on Materials for Advanced Technology), sponsored by the IUMRS, Singapore, July 3-8, 2005.
- Symposium Chair, “Spintronics”, The 2005 International Conference on MEMS, NANO and Smart Systems, Banff, Alberta, Canada, July 24-27, 2005.
- Member, National Advisory Committee, 24<sup>th</sup> International Conference on Low Temperature Physics, Orlando, Florida, August 10-17, 2005.
- Member, International Advisory Committee, International Symposium on Spintronics and Advanced Magnetic Technologies (ISAMT’05), Taipei, Taiwan, August 17 - 20, 2005.
- Distinguished International Organizer, The International Symposium on Physics of Magnetic Materials, ISPMM) 2005 Singapore, September 14th-16th, 2005.
- Chairman and Organizer, Spin Currents 2006, a SpinAps International Workshop/Retreat, organized jointly with Stanford University and Tohoku University, IBM Almaden Research Center, March 17-19, 2006.
- Member, International Advisory Committee, International Conference on Magnetism (ICM), Kyoto, Japan, August 20-25, 2006.
- Member, International Advisory Committee, 19<sup>th</sup> International Colloquium on Magnetic Films and Surfaces (ICMFS), Sendai, Japan, August 15-18, 2006.
- Member, International Advisory Board, ISAMMA - The 1<sup>st</sup> International Symposium on Advanced Magnetic Materials and Applications, Jeju Island, Korea, May 28-June 1, 2007.
- Chairman and Organizer, Quantum Nanoscience with Spins Retreat, a SpinAps International Workshop/Retreat, organized jointly with Stanford University and the Pacific Institute of Theoretical Physics, with additional support from the Center for the Center for Nanoscale Science and Engineering, University of California, Riverside and Grandis, Asilomar Conference Center, Pacific Grove, California, June 3-6, 2007.
- Member, International Advisory Committee, and Member, Program Committee, The 6<sup>th</sup> IEEE Metallic Multilayer Symposium (MML 07), Perth, Western Australia, October 15-19, 2007.
- Member, International Advisory Committee, The 5<sup>th</sup> International Conference on Physics and Applications of Spin-related Phenomena in Semiconductors (PASPS V), Foz do Iguacu, Paraná, Brazil, August 3-6, 2008.
- Opponent, Ph.D. defense of Ruisheng Liu, Halmstad University, Sweden, September 22, 2008.
- Chairman and Organizer, Spin Currents 2009, a SpinAps International Workshop/Retreat, organized jointly with Shoucheng Zhang and Jim Harris, Stanford University and Teho Wu, the National Yunlin University of Science and Technology, Taiwan, Stanford Sierra Conference Center, Turning Leaf Lake, California, April 17-19, 2009.
- Member, International Review panel, Physics Department, University College London (UCL), April 22-24, 2009.
- Member, International Review Panel, London Center of Nanotechnology, London, United Kingdom, May 26-27, 2009.
- Member, International Advisory Board, The International Conference on Magnetism 2009, Karlsruhe, Germany, July 27 – 31, 2009.
- Chairman and Organizer, Discussion Meeting on “The Spin on Electronics!”, The Royal Society, London, United Kingdom, September 28-29<sup>th</sup>, 2009.
- Member, International Advisory Committee, Third International WUN Conference on “Spintronic Materials and Devices”, Beckman Institute, University of Illinois at Urbana-Champaign, June 21-23, 2010.
- Member, International Advisory Committee, IV Euro-Asian Symposium on Magnetism: Nanospintronics, EASTMAG -2010, Ekaterinburg, Russia, June 28 – July 2<sup>nd</sup>, 2010.
- Member, International Advisory Committee, IEEE 7th International Symposium on Metallic Multilayers (MML2010), Berkeley, California, September 19-24<sup>th</sup>, 2010.
- Chairman and Organizer, SpinAge 2010, a SpinAps International Workshop and Summer School, organized jointly with Shoucheng Zhang, Stanford University and Claudia Felser, the University of Mainz School of Excellence, Pahajo Dunes, Watsonville, California, August 27-31, 2010.
- Member, Ph.D. Defense Committee of Reinoud Lavrijsen, Eindhoven University of Technology, Eindhoven, The Netherlands, January 27<sup>th</sup>, 2011.
- Member, International Advisory Committee, 19th International Conference on Magnetism (ICM2012) hosted by the Korean Physical Society and the Korean Magnetism Society, Busan, Korea, July 8-13, 2012.
- Member, Advisory Board, International Symposium on Integrated Functionalities (ISIF) Conferences, 2011-2014.
- Co-organizer with Yaroslav Tserkovnyak (UCLA), Gerit Bauer (Tohoku University/ Delft) and Alan Macdonald (UT Austin) of a 2.5 month long program entitled "Spintronics: Progress in Theory, Materials, and Devices", Kavli Institute of Theoretical Physics (KITP), UCSB, September 30- December 20, 2013.

- Chairman and principle organizer, IBM Almaden Institute 2012 meeting on “Synthetic Routes to Room Temperature Superconductivity”, October 17-18<sup>th</sup>, 2012 and preceding Summer School on the same topic, October 15-16<sup>th</sup>, 2012, San Jose, California.
- Member, Ph.D. Thesis Defense Committee of Raja (Rajasekhar Medapalli), University of Nijmegen, The Netherlands, February 18<sup>th</sup>, 2014.
- Member, Ph.D. Thesis Defense Committee of Jereon Franken, Eindhoven University of Technology, The Netherlands, March 20<sup>th</sup>, 2014.
- Chairman, International Advisory Panel, EPSRC Collaborative Research Project “Spintronics at Leeds”, The University of Leeds, August 2014.
- Vice-Chairman, Gordon Research School and Conference on Spin Dynamics in Nanostructures, Hong-Kong, July 25- 26<sup>th</sup>, 2015.
- Member, International Advisory Committee, 9<sup>th</sup> International Symposium on Metallic Multilayers (MML2016), Uppsala, Sweden, June 19-23, 2016.
- Member, Singapore National Research Foundation NRF Competitive Research Programme (CRP) International Evaluation Panel (IEP), Singapore, October 1, 2014 to September 30, 2017, reappointed for 2<sup>nd</sup> 3 year term 2017-2020.
- Member, Evaluation Panel, ERC Synergy 2018.
- Co-Organizer, Conference on “Cognitive Computing: Merging Concepts and Hardware”, funded by the Volkswagen Foundation, Castle of Herrenhausen Hannover, Germany, December 18-20, 2018.

### Major IBM Awards (other)

- IBM Outstanding Technical Achievement Award for Work on High Temperature Superconductivity, May 1989.
- IBM Outstanding Technical Achievement Award for Studies of Giant Magnetoresistance and Discovery of Oscillatory Exchange Coupling in Transition Metals, November 17, 1992.
- IBM Outstanding Technical Achievement Award for Development of Spin-Valve Structures, November 17, 1992.
- 1995 IBM Almaden Innovation Grant for "Development of Multi-Level Magnetic Recording System": awarded in the annual competition, December 19, 1994.
- IBM Research Division Master Inventor, March 1997- March 2000.
- IBM Research Division Technical Group Award for Contributions to Progress on MagRAM, December 11, 1996.
- Elected Member, IBM Academy of Technology, September 1997.
- IBM Outstanding Innovation Award for development of giant magnetoresistance head technology, December 9, 1999.
- IBM Research Division Master Inventor, March 2000- March 2003.
- IBM Research Division Master Inventor, Fall 2003- Fall 2006.
- IBM Outstanding Technical Achievement Award for “Giant tunneling magnetoresistance in MgO based tunnel junctions”, July 2007.
- IBM Supplemental Outstanding Technical Achievement Award for “Giant tunneling magnetoresistance in MgO based tunnel junctions”, January 3, 2008.
- IBM Materials Research Community 2009 Best Paper Award for “Magnetic Domain Wall Racetrack Memory” and “Current-controlled magnetic domain-wall nanowire shift register” papers published in Science (April, 2008).
- IBM Research – Almaden 2010 Grand Challenge Competition Winner for “Room Temperature Superconductivity by Design”, August 25, 2010.

### IBM Patent Awards

- IBM Patent Achievement Award-First Patent Application, March 1987.
- IBM Patent Achievement Award-First Plateau, March 1990.
- IBM Patent Achievement Award-Second Plateau, October 1991.
- IBM Research Division Valuable Patent Award for patent, "Magnetoresistive sensor based on the spin valve effect", (US Patent #5,206,590), June 22, 1994.
- IBM Patent Achievement Award-Third Plateau, October 1994.

- IBM Supplemental Patent Issue Award- Top 5%- for US patent #5,206,590, "Magnetoresistive Spin Valve Sensor with Improved Pinned Ferromagnetic Layer and Magnetic Recording System Using the Sensor", ranked among top 5% most valuable IBM Patents issued in 1995, April 29, 1996.
- IBM Patent Achievement Award-Fourth Plateau, April 1996.
- IBM Patent Achievement Award-Fifth Plateau, January 1997.
- IBM Patent Achievement Award-Sixth Plateau, October 24, 1997.
- IBM Invention Achievement Award- Supplemental Patent Issue for US Patent 5,598,308, "Magneto-resistance sensor having multilayer thin film structure", April 10, 1998.
- IBM Invention Achievement Award- Supplemental Patent Issue for US Patent 5,650,958, "Magnetic tunnel junctions with controlled magnetic response", April 10, 1998.
- IBM Invention Achievement Award- Supplemental Patent Issue for US Patent 5,640,343, "Magnetic Random Access Memory (MRAM) with Diode-isolated Circuit Architecture", April 10, 1998.
- IBM Patent Achievement Award-Seventh Plateau, June 1998.
- IBM Patent Achievement Award-Eighth Plateau, March 1999.
- IBM Invention Achievement Award – Supplemental Patent Issue – Top 5% for US Patent 5,729,410, “Magnetic Tunnel Junction Device with Longitudinal Biasing”, May 1999.
- IBM Invention Achievement Award – Supplemental Patent Issue – Top 25% for US Patent 5,841,692, “Magnetic tunnel junction device with antiferromagnetically coupled pinned layer”, May 1999.
- IBM Patent Achievement Award-Ninth Plateau, October 1999.
- IBM Patent Achievement Award-Tenth Plateau, May 2000.
- IBM Invention Achievement Award- Supplemental Patent Issue- Top 5% for US Patent 5,898,548, “Shielded magnetic tunnel junction magnetoresistive read head”, June 2000.
- IBM Invention Achievement Award- Supplemental Patent Issue-Top 25% for US Patent 5,898,547, “Magnetic tunnel junction magnetoresistive read head with sensing layer as flux guide”, June 2000.
- IBM Invention Achievement Award- Supplemental Patent Issue-Top 25% for US Patent, 5,901,018 “Magnetic tunnel junction magnetoresistive read head with sensing layer as rear flux guide”, June 2000.
- IBM Invention Achievement Award- Supplemental Patent Issue-Top 25% for US Patent 5,966,012, “Magnetic tunnel junction device with improved fixed and free ferromagnetic layers”, June 2000.
- IBM Patent Achievement Award-Eleventh Plateau, December 2000.
- IBM Invention Achievement Award- Supplemental Patent Issue-Top 25% for US Patent 6,072,718 “Magnetic memory devices having multiple magnetic tunnel junctions therein”, June 2001.
- IBM Invention Achievement Award- Supplemental Patent Issue-Top 25% for US Patent 6,166,948 “Magnetic memory array with magnetic tunnel junction memory cells having flux-closed free layers”, June 2001.
- IBM Invention Achievement Award- Supplemental Patent Issue-Top 25% for US Patent 6,023,395 “Magnetic tunnel junction magnetoresistive sensor with in-stack biasing”, June 2001.
- IBM Invention Achievement Award-Supplemental Patent Issue Award for Top 10% of IBM’s patents issued in 2001 for US Patent 6,226,160 “Small area magnetic tunnel junction devices with low resistance and high magnetoresistance”, July 2002.
- IBM Patent Achievement Award-Twelfth Plateau, December 19, 2002.
- IBM Patent Achievement Award-Thirteenth Plateau, August 2003.
- IBM Invention Achievement Award-Supplemental Patent Issue Award for Top 10% of IBM’s patents issued in 2002 for US Patent 6,359,289 “Magnetic tunnel junction device with improved insulating tunnel barrier”, October 2003.
- IBM Patent Achievement Award-Fourteenth Plateau, November 2003.
- IBM Patent Achievement Award-Fifteen Plateau, July 2004.
- IBM Invention Achievement Award - Supplemental Patent Issue Award for Top 10% of IBM’s patents issued in 2003 for US Patent 6,518,588 “Magnetic Random Access Memory with Thermally Stable Magnetic Tunnel Junction Cells”, July 2004.
- IBM Patent Achievement Award-Sixteen Plateau, December 16, 2004.
- IBM Patent Achievement Award-Seventeenth Plateau, June 2005.
- IBM Invention Achievement Award- Supplemental Patent Issue Award for top 10% of IBM’s issued patents in 2004- for US Patent 6,834,005 “Shiftable Magnetic Shift Register and Method of using the same”, July, 2005.
- IBM Patent Achievement Award-Eighteenth Plateau, November 2005.

- IBM Patent Achievement Award-Supplemental Patent Issue Award for Top 10% of IBM's patents issued in 2006 for US Patent 6,955,926 "Method of fabricating data tracks for use in a magnetic shift register memory device", February 2007.
- IBM Patent Achievement Award-Nineteenth Plateau, March 2007.
- IBM Patent Achievement Award-Twentieth Plateau, October 2007.
- IBM Patent Achievement Award-Twenty-first Plateau, April 2009.
- IBM Patent Achievement Award-Twenty-second Plateau, December 2009.
- IBM High Value Patent Application Award for "Method and apparatus for fabricating sub-lithography data tracks for use in magnetic shift register memory devices", filed August 14, 2007, February 15, 2010.
- IBM High Value Patent Application Award for "Uni-directional magnetic racetrack using solid state memory", filed November 2008, April 10, 2011.
- IBM Patent Achievement Award-Twenty-Third Plateau, January 20, 2012.
- IBM Patent Achievement Award-Twenty-Fourth Plateau, December 5, 2012.
- IBM High Value Patent Application Award for "Magnetic Spin Shift Register", filed July 2010, January 21<sup>st</sup>, 2013.
- IBM Patent Achievement Award-Twenty-Fifth Plateau, October 15, 2014.
- IBM High Value Patent Application Award for "Domain wall motion in perpendicularly magnetized wires having magnetic multilayers with engineered interfaces", filed July 7, 2012, issued as patent number 8,638,601 by the United States Patent and Trademark Office, January 28, 2014.
- IBM Patent Achievement Award-Twenty-Sixth Plateau, October 31, 2015.
- IBM Patent Achievement Award-Twenty-Seventh Plateau, July 11, 2016.

#### Invited Talks at Conferences and Workshops

1. "Pressure Dependence of the Metal-Insulator and Superconducting Phase Transitions in  $(\text{TMTSeF})_2\text{ReO}_4$ ", International Conference on Low-Dimensional Conductors, Boulder, Colorado, USA, August 1981.
2. "A New Class of Organic Superconductors", Synthetic Low-Dimensional Conductors and Superconductors, Les Arcs, Bourg Saint-Maurice, France, December 1982.
3. "Superconductivity in Organic Linear Chain Conductors", Solid State Physics Conference, London, U.K., December 1982.
4. "Narrow Window for Superconductivity in Organic Conductors", N.A.T.O. Davy Advanced Study Institute, Cavendish Laboratory, Cambridge, September 1983.
5. "The Many Faces of the ET Family", International Conference on Synthetic Metals and Superconductors, Abano Terme, Italy, July 1984.
6. "Chemistry and Physics of a New Class of Organic Superconductors", Symposium on Solid-State Chemistry, 35th Southeastern Regional Meeting of the American Chemical Society (SERMACS-35), Univ. Mississippi, with E.M. Engler, November 1983.
7. "Predictions of Organic Superconductivity: Fact or Fiction!", Synmetals III Workshop, Los Alamos National Laboratory, Los Alamos, April 10, 1985.
8. "Structure Property Relationships in Conducting Organic Crystals", American Chemical Society /Society for Applied Spectroscopy 24<sup>th</sup> Pacific Conference on Chemistry and Spectroscopy, San Francisco, October 9-11, 1985.
9. "Magnetic Thin Films", Neutron Scattering in Materials Science, Argonne National Laboratory, Argonne, Illinois May 14-16, 1986.
10. "The ET Family Revisited", International Conference on Science and Technology of Synthetic Metals, Kyoto, Japan, June 1-6, 1986.
11. "Quantum Oscillations and Field-Induced Transitions in  $(\text{TMTSeF})_2\text{ReO}_4$ ", with R.L. Greene and H. Schwenk, International Conference on Physics and Chemistry of Quasi One- Dimensional Conductors, Lake Kawaguchi, Yamanashi, Japan, May 26-30, 1986.
12. "Magnetism and Superconductivity in  $\text{La}_{2-x}\text{Sr}_x\text{CuO}_{4-y}$ ", with D. Jerome and W. Kang, Magnetism and Magnetic Materials Meeting, Chicago, November 9-12, 1987.
13. "Ferromagnetic Interactions in Organic Solids: An Overview of Theory and Experiment", with J.B. Torrance, P.S. Bagus, I. Johannsen, A.I. Nazzal, and P. Batail, Magnetism and Magnetic Materials Meeting, Chicago, November 9-12, 1987.

14. "Finite Size Scaling in Ultra-Thin Antiferromagnetic Films", IBM European Workshop on Magnetism, Paris, France, Nov 18-20, 1987.
15. "Bulk Superconductivity at 125 K in  $Tl_2Ca_2Ba_2Cu_3O_x$ ", APS March Meeting, Panel Discussion on High Temperature Superconductors, March 22nd, 1988.
16. "Superconductivity at 125 K in  $Tl_2Ca_2Ba_2Cu_3O_x$ ", Materials Research Society Spring Meeting, Reno, Nevada, April 5-8, 1988.
17. "Superconductivity in the Tl-Ca-Ba-Cu-O System", International Conference on the First Two Years of High Temperature Superconductivity, University of Alabama, Tuscaloosa, April 11-13, 1988.
18. "Magnetic Exchange Coupling Across Metal Interfaces", 11th Surface/Interface Research Meeting of the NCCAVS, San Jose, California, June 3rd, 1988.
19. "Magnetic Properties of Epitaxially Grown Rare-Earth Films", International Conference on Magnetism, Paris, France, July 25-29, 1988.
20. "Finite-Size Scaling in Ultra Thin Antiferromagnetic Films", 12th International Colloquium on Magnetic Films and Surfaces, Le Creusot, Burgundy, France, August 1-5, 1988.
21. "A Model Family of High Temperature Superconductors", Superconductivity Workshop, IBM Europe Institute, Oberlech, Austria, August 8-12, 1988.
22. "Magnetic Exchange Coupling Across Interfaces", Inaugural Warren E. Henry Symposium on Magnetism, Howard University, Washington, DC, August 15-16, 1988.
23. "The Essence of High Temperature Superconductivity", with J.B. Torrance, R. Beyers, E.M. Engler, G.L. Gorman, T.C. Huang, S.J. La Placa, V.Y. Lee, A.I. Nazzal, R.J. Savoy and Y. Tokura, American Chemical Society, Los Angeles, September 25-30, 1988.
24. "High Temperature Superconductivity in the  $Tl_mCa_{n-1}Ba_2O_{2(n+1)+m}$  ( $n= 1, 2, 3; m=1, 2$ ) Family", The Electrochemical Society, Chicago, October 9-14, 1988.
25. "A Model Family of High Temperature Superconductors:  $Tl_mCa_{n-1}Ba_2O_{2(n+1)+m}$  ( $n= 1, 2, 3; m=1, 2$ )", Materials Research Society Meeting, Boston, November 28- December 3, 1988.
26. "Review of Structure and Properties of :  $(Tl/Bi)_m(Ca)_{n-1}(Ba/Sr)_2Cu_nO_y$  High Tc Compounds", Materials Research Society Spring Meeting, San Diego, April 24-29, 1989.
27. "Finite-Size Effects in Magnetic Thin Films", Materials Research Society Spring Meeting, San Diego, April 24-29, 1989.
28. "Structural and Magnetic Characterization of Transition Metal and Rare Earth Films Grown on Epitaxial Buffer Films on Semiconductor Substrates", with R.F.C. Farrow and V.S. Speriosu, Materials Research Society Spring Meeting, San Diego, April 24-29, 1989.
29. "Magnetic Coupling across Interfaces in Ultra-Thin Magnetic Layered Structures", 2nd International Workshop on the Magnetic Properties of Low Dimensional Systems, San Luis Potosi, Mexico, May 22-26, 1989.
30. "Giant Magnetoresistance and Antiferromagnetic Interlayer Coupling in Sputtered Polycrystalline Fe/Cr multilayers", Workshop on Current Status and Future Opportunities in Magnetism at Surface and Interfaces, Santa Fe, June 18-21, 1989.
31. "Properties of Tl-Ca-Ba-Cu-O High Temperature Superconductors", Gordon Conference on Superconducting Films, Tilton, New Hampshire, July 17-21, 1989.
32. "Giant Magneto-Resistance in Sputtered Magnetic Superlattices", 35th Annual Conference on Magnetism and Magnetic Materials, Boston, November 27- December 4, 1989. [Abstract published J. Appl. Phys. **67**, 5931 (1990)].
33. "Giant Magneto-Resistance in Sputtered Magnetic Superlattices", Symposium on Contemporary Magnetism Issues, Northern California Chapter of the American Vacuum Society and the Santa Clara IEEE Magnetism Society, San Jose, February 9th, 1990.
34. "Oscillations in Exchange Coupling and Magnetoresistance of Sputtered Metal Superlattices", March Meeting of the American Physical Society, Anaheim, California, March 12-16, 1990.
35. "Oscillatory Exchange Coupling in Metallic Superlattices -a general phenomenon", European Materials Research Society, Strasbourg, May 29-June 1, 1990.
36. "Giant Magnetoresistance and Oscillations in Exchange Coupling in Sputtered Metallic Superlattices", IBM Workshop on Magnetism, Nice, France, November 15-17, 1990.
37. "Giant Magnetoresistance and Oscillatory Exchange Coupling in Sputtered Metallic Superlattices", SERC Magnetic Multilayers Workshop, Leeds, England, December 18-19, 1990.
38. "Giant Magnetoresistance and Oscillatory Exchange Coupling in Cu based Metallic Superlattices", International Symposium on 3d Transition -Semi Metal Thin Films- Magnetism and Processing, Sendai, Japan, March 5-8, 1991.

39. "Giant Magnetoresistance and Oscillatory Exchange Coupling in Metallic Superlattices", Materials Research Society Spring Meeting, Anaheim, California, April 29- May 3, 1991.
40. "Giant Magnetoresistance and Oscillatory Exchange Coupling in Metallic Superlattices", 13th International Colloquium on Magnetic Films and Surfaces, University of Glasgow, United Kingdom, August 26-30, 1991.
41. "Giant Magnetoresistance and Oscillatory Exchange Coupling in Metallic Superlattices", Workshop on Multilayer, Surfaces and Thin Films, Annual General Meeting of the Sociedade Brasileira de Fisica, Rio de Janeiro, Brazil, July 15-16, 1991.
42. "Giant Magnetoresistance and Oscillatory Exchange Coupling in Metallic Superlattices", International Workshop on Spin-Valve Layered Structures, Laboratorio Salvador Velayos, Complutense University, Madrid, Spain, September 9-12, 1991.
43. "Applications of Giant Magnetoresistance", Workshop on Thin-Film Magnetism, sponsored by Army Research Office, Research Triangle Park, North Carolina, December 10-11, 1991.
44. "Giant Magnetoresistance and Oscillatory Exchange Coupling in Metallic Superlattices", *Microstructure of Magnetic Materials*, 1992 Arizona State University High Resolution Electron Microscopy Workshop, Wickenburg, Arizona, January 8-11, 1992.
45. "Giant Magnetoresistance in Coupled Multilayers", Colloquium on Magnetic Thin Films, Stanford University, January 16-17, 1992.
46. "Giant Magnetoresistance in Multilayers and Sandwiches", Intermag 92, International Magnetism Conference, St. Louis, Missouri, April 13-16, 1992.
47. "Oscillatory Exchange Coupling through Transition Metals", USA-Japan Seminar on Magnetic Multilayered Structures, sponsored by National Science Foundation, Hawaii, May 15-17, 1992.
48. "Giant Magnetoresistance in Sputtered Magnetic Multilayers", N.A.T.O. ARW on "Magnetism and Structure in Systems of Reduced Dimensions", Cargese, Corsica, June 15-19, 1992.
49. "Indirect Exchange Coupling through Transition Metals", Plenary invited talk, International Conference on the Physics of Transition Metals, Darmstadt, Germany, July 20-24, 1992.
50. "Magneto-transport and Magnetic Properties of Magnetic Multilayers", International School of Physics, St. Petersburg, Russia, August 24- September 4, 1992.
51. "Growth Modes of Co/Cu Wedged Superlattices by X-ray Photoelectron Diffraction: Relation to Giant Magnetoresistance", G.R. Harp, R.F.C. Farrow, R.F. Marks, S.S.P. Parkin, Q.H. Lam, R.J. Savoy, and M. Toney, Seventh International Conference on Molecular Beam Epitaxy, Schwäbisch Gmünd, Germany, August 24-28, 1992.
52. "Exchange Coupling and Magnetoresistance Effects in Multilayers", International Symposium on Magnetic Thin Films, Multilayers and Surfaces, Lyon, France, September 7-10, 1992.
53. "Giant Magnetoresistance in Co/Cu Multilayers Grown on Kapton", S.S.P. Parkin, K.P. Roche and T. Suzuki, (presented by T. Suzuki), The 16th Annual Conference on Magnetism in Japan, Nagoya, Japan, November 7-10, 1992.
54. "Origin of the giant magnetoresistance effect in magnetic multilayers and granular alloys", International Workshop on Novel Properties of Magnetic Superlattices, Nagoya University, Nagoya, Japan, February 27, 1993.
55. "Oscillatory Interlayer Coupling and Giant Magnetoresistance in Magnetic Multilayers Containing Alloy Spacer Layers", International Symposium on Metallic Multilayers, MML'93, Kyoto, Japan, March 1-5, 1993.
56. "How Low a Saturation Field is Possible in GMR Multilayers?", The Application of Magnetic Multilayers, Tohoku University, Sendai, Japan, March 8, 1993.
57. "Tuning the Period of Oscillatory Exchange Coupling Through Transition and Noble Metal Alloys", 1993 March Meeting of the American Physical Society, Seattle, March 22-26, 1993.
58. "Co Cluster Size Characterization in Phase-Separated Co-Cu and Co-Ag Granular Alloys", T.A. Rabedeau, M. Toney, R. Marks, S.S.P. Parkin, R.F.C. Farrow and G.R. Harp, (presented by T.A. Rabedeau), Symposium on Magnetic Ultrathin Films, Multilayers and Surfaces, Materials Research Society, San Francisco, April 13-16, 1993.
59. "Giant Magnetoresistance and Oscillatory Indirect Exchange Coupling in Transition Metal Multilayers", 5th Annual Symposium of the Western Pennsylvania chapter of the American Vacuum Society, May 4, 1993.
60. "Interfacial Origin of Giant Magnetoresistance", 1993 Canadian Association of Physics Congress, Burnaby, B.C., Canada, June 13-16, 1993.
61. "Magnetic Recording Read Heads Employing Giant Magnetoresistance", ARPA/ONR Workshop on Spin-Polarized Transport, Arlington, Virginia, 13-14 September 1993.

62. "Giant Magnetoresistance and Oscillatory Coupling in Magnetic Multilayers", (3 lectures), International workshop on Magnetic Thin Films and Multilayers, Centro Internacional de Fisica da Materia Condensada-UN Brasilia, Brazil, September 27- October 1, 1993.
63. "Interfacial Origin of Giant Magnetoresistance in Magnetic Multilayers and Granular Alloys", Annual Physics Meeting, Leeds, United Kingdom, December 20-24, 1993.
64. "Interfacial Origin of Giant Magnetoresistance in Magnetic Multilayers and Granular Alloys", International Symposium on Theoretical Physics, "Kourovka-94": 'Magnetic Multilayers and Low-Dimensional Magnetism', Ekaterinburg, Russia, February 28- March 6, 1994.
65. American Physical Society International Prize for New Materials Lecture, "Artificially Engineered Metals: Giant Magnetoresistance and Oscillatory Interlayer Exchange Coupling in Transition Metal Multilayers", 1994 March meeting of The American Physical Society, Pittsburgh, Pennsylvania, March 21, 1994.
66. "Role of Interface Roughness on Interlayer Coupling and Giant Magnetoresistance in Magnetic Multilayers", European Research Conference on *Fundamental Aspects of Surface Science: Surface and Thin Film Magnetism*, Port d'Albret (Biarritz), France, June 10-15, 1994.
67. "Seeded Epitaxy in Sputter Deposition", *Magnetism in Small Scale Structures*, program meeting sponsored by Office of Naval Research, Albuquerque, New Mexico, June 24, 1994.
68. "Role of Interface Scattering in Giant Magnetoresistance", International Conference on Magnetism, Warsaw, Poland, August 22-26, 1994.
69. "Artificially Engineered Metal Multilayers: Transport and Magnetic Properties", Workshop in honor of A. Yoffe's 75th birthday, St. John's College, Cambridge, December 3, 1994.
70. "Origin of Giant Magnetoresistance", International Workshop on Spin Polarized Electron Transport, Miami, Florida, February 19-23, 1995.
71. "Giant Magnetoresistance of Magnetic Multilayers: Influence and Engineering of Interfaces", European Materials Research Society, Strasbourg, May 22-26, 1995.
72. "Giant Magnetoresistance in Magnetic Inhomogeneous Systems", Workshop on Exchange Coupling and Giant Magnetoresistance in Magnetic Multilayers, Aspen Center for Physics, Aspen, Colorado, May 29- June 9, 1995.
73. "Crystalline Metal Multilayers via Sputter Deposition", Third International Symposium on Sputtering and Plasma Processing (ISSP'95), Tokyo, Japan, June 8-9, 1995.
74. "Giant Magnetoresistance - an Interfacial Scattering Phenomenon", Workshop on *Magnetism in Multilayered and Reduced Dimensional Systems*, Argonne, Illinois, June 19-23, 1995.
75. "Structural Dependence of Giant Magnetoresistance in Magnetic Multilayers", IV International Conference on Advanced Materials 1995 (IV-ICAM'95), Cancun, Mexico, August 27 - September 1, 1995.
76. "Development of Giant Magnetoresistance and its Applications", Eighth Chinese International Summer School of Physics/ Beijing International Workshop on Modern Magnetism, Beijing, China, August 28-September 7, 1995.
77. "Influence of Fe-dusted Interfaces on Giant Magnetoresistance", 12th International Conference on Soft Magnetic Materials (SMM12), Krakow, Poland, September 12-14, 1995.
78. "Open questions in Giant Magnetoresistance", American Vacuum Society, Minneapolis, Minnesota, Oct 16-20, 1995.
79. "Artificially Engineered Magnetic Multilayers", International Symposium on the Science and Technology of Atomically Engineered Materials, Richmond, Virginia, October 30- November 4, 1995.
80. "Open questions in Giant Magnetoresistance of Magnetic Multilayers", 40th Magnetism and Magnetic Materials Conference, Philadelphia, November 6-9, 1995. [*J. Appl. Phys.* **79**, 6078 (1996)].
81. "Overview of Giant Magnetoresistance", (Keynote address), Japan Institute of Metals '95 Fall Annual Meeting, Honolulu, Hawaii, December 13-15, 1995.
82. "Magnetic multilayers: present and future directions", Workshop on *Recent Advances in the Use of Synchrotron Radiation in the Study of Magnetism*, Brookhaven National Laboratory, May 22, 1996.
83. "Biquadratic Coupling in Sputtered (100) Fe/Cr Multilayers", Workshop on Fe/Cr Interface Magnetism, Strasbourg, France, June 2-3, 1996.
84. "Magnetism of Transition Metal Superlattices", Symposium on Magnetic Metals, Royal Danish Academy of Sciences, Copenhagen, Denmark, August 26-29, 1996.
85. "Magnetoresistance of Transition Metal Multilayered Structures", 2nd Hinokuni Workshop, International Workshop on the Transition Metals and Compounds under Multi Extreme Conditions, Kumamoto, Japan, September 18-20, 1996.
86. "Giant Magnetoresistance in Magnetic Multilayers and Tunnel Junctions", 1st Symposium on "Spin-Charge-Photon Coupled Systems", a Center of Excellence project, Tokyo, Japan, December 4-6, 1996.



87. "Magnetic Materials for Storage: Science and Technology", 1996 Scott Lectures, The Cavendish Laboratory, University of Cambridge, January 27, 29 and 31, 1997 (3 lectures).
88. "Spin-Polarized Transport in Magnetic Nano-structures", *Recent Developments in Solid State Physics*, Edgar Luscher Seminar 1997, Serneus, Switzerland, February 1-6, 1997.
89. "Large Magnetoresistance in Magnetic Tunnel Junctions", American Physical Society March Meeting, Kansas City, Missouri, March 17-21, 1997. (Division of Materials Physics focused session on Magnetic Nanostructures and Heterostructures).
90. "Basics of Giant and Tunneling Magnetoresistance", Tutorial on *Fundamental Magnetic and Magneto-Transport Properties of Metallic Thin Films and Superlattices*, American Physical Society March Meeting, Kansas City, Missouri, March 17-21, 1997.
91. "Magnetic Tunnel Junctions: Science and Technology", The Electronic Materials Symposium, Sunnyvale, California, March 24, 1997.
92. "Spin-polarized Tunneling Phenomena and Applications", Spring Meeting of the Materials Research Society, Symposium M, Magnetic Ultrathin Films, Multilayers and Surfaces, San Francisco, March 31 - April 4, 1997.
93. "Unusual magnetoresistance mechanisms in metallic nano-structures", NATO Advanced Study Institute on *Dynamical properties of unconventional magnetic systems*, Geilo, Norway, April 2-12 1997.
94. "Magnetic Tunnel Junctions: Science and Technology", IEEE Magnetics Society, Santa Clara University, Santa Clara, California, May 20, 1997.
95. "Spin-dependent transport in Magnetic Nano-structures", N.A.T.O. Advanced Study Institute on *Frontiers in Magnetism of Reduced Dimensional Systems*, Kiev, Ukraine, May 25-June 3, 1997.
96. "Magnetic Nano-structures: Growth, Physics and Applications", 1997 Gordon Research Conference on *Thin Film and Crystal Growth Mechanisms*, New Hampshire, July 6-11, 1997.
97. "Spin-Tunneling Magnetoresistance", 15th International Colloquium on Magnetic Films and Surfaces, (ICMFS), Sunshine Coast, Australia, August 4-8, 1997.
98. "Giant Magnetoresistance: Science and Technology", 16<sup>th</sup> General Conference of the Condensed Matter Division of the European Physical Society, Leuven, Belgium, August 25-28, 1997.
99. "Magnetic Materials for Storage: Science and Technology", The Autumn School on Condensed Matter Physics, Nanjing, China, October 5-19, 1997.
100. "Magnetoresistance of Shadow-masked and Micro-structured Magnetic Tunneling Junctions", 1997 Fall Conference, Korean Magnetics Society, Hanyang University, Seoul, Korea, November 1, 1997.
101. "Spin-dependent Transport in Magnetic Multilayered Structures", Korea Institute for Advanced Study Symposium on the Occasion of the 1<sup>st</sup> Anniversary, Seoul, Korea, November 3, 1997.
102. "Magnetic tunnel junctions", Gordon Research Conference on Magnetic Nanostructures, Ventura, California, January 25-30, 1998.
103. "Magnetic Nano-structures", WE-Heraeus Seminar, Physikzentrum Bad Honaf, Germany, February 15-18, 1998.
104. "Magnetic Tunnel Junctions: Science and Technology", 1998 Mardi Gras Symposium, New Orleans, Louisiana, February 20, 1998.
105. "Magnetic Thin Films: Important Problems", Scientific Directions at the Advanced Light Source, Berkeley, California, March 23-25, 1998.
106. "Magnetic Tunnel Junctions: Science and Technology", Annual Research Centers at Minority Institutions (RCMI) Symposium on "Materials for the 21st Century and Beyond", Hunter College of the City University of New York, Manhattan, April 29, 1998.
107. "Frontiers of Materials Science: Thin-Film Magnetic Materials", Forum on New Materials sponsored by the Academy Industry Program of the National Research Council, Arnold and Mabel Beckman Center of the National Academies of Sciences and Engineering, Irvine, California, May 28-29, 1998.
108. "Magnetic Tunnel Junctions", Plenary Talk, 3<sup>rd</sup> International Symposium on Metallic Multilayers (MML'98)/ EMRS Symposium on Magnetic Ultrathin Films and Ultrathin Film Nanostructures, Vancouver, Canada, June 14-19, 1998.
109. "Microstructured Magnetic Tunnels", International Conference on Superlattice, Microstructures and Microdevices, Hurgada (ICSMM-11), Egypt, July 27- August 1, 1998.
110. "Spin-dependent Tunneling in Planar Magnetic Tunnel Junctions", Fourth International Symposium on Physics of Magnetic Materials, Sendai, Japan, August 23-26, 1998.
111. "Magnetic Nano-structures", 14<sup>th</sup> International Vacuum Congress (IVC-14), Birmingham, United Kingdom, August 31- September 4, 1998.
112. "Magnetic tunneling junctions", 7<sup>th</sup> International Conference on Magnetic Recording Media, Maastricht, The Netherlands, August 31- September 2, 1998.

113. "Spin dependent tunneling and application to non-volatile random access memory", Physics by the Bay 1998, Stanford University, Palo Alto, California, September 26, 1998.
114. "Spin Dependent Tunneling and its Application to Non Volatile Magnetic Random Access Memory", 43<sup>rd</sup> Annual Conference on Magnetism and Magnetic Materials (MMM98), Miami, Florida, November 9-12, 1998.
115. "Magnetic Tunnel Junctions- role of interfaces", Physics and Chemistry of Interfaces Conference, San Diego, California, January 17-21, 1999.
116. "New developments in magnetic materials and their impact on technology", Conference on Advanced Materials sponsored by the Royal Society of Edinburgh, Edinburgh, United Kingdom, March 17, 1999.
117. [Plenary Lecture] "Coming of Age of Magnetic Multilayers: Giant Magnetoresistance Field Sensors and Magnetic Tunnel Junction Memory Elements", Plenary Lecture, German Physical Society Spring Meeting, Münster, Germany, March 22-26, 1999.
118. "Coming of Age of Magnetic Multilayers: Giant Magnetoresistance Field Sensors and Magnetic Tunnel Junction Memory Elements", American Physical Society Centennial March Meeting, Atlanta, Georgia, March 20-26, 1999.
119. "Exchange-biased Magnetic Tunnel Junctions and Application to Magnetic Random Access Memory", Workshop on Exotic Multilayered Systems, Georgia Institute of Technology, Atlanta, March 27, 1999.
120. "Science and Technology of Thin Film Magnetic Materials and Devices", Norman Hascoe Distinguished Lecture, Department of Physics, University of Connecticut, April 19, 1999.
121. "High Performance Magnetic Random Access Memory Using Magnetic Tunnel Junction Storage Cells", Intermag'99, Kyongju, Korea, May 18-21, 1999.
122. "Giant Magnetoresistive and Magnetic Tunneling Structures", International Symposium on Advanced Magnetic Technologies, Academia Sinica, Taipei, Taiwan, May 24-25, 1999.
123. [Plenary Lecture] "The future of Information Storage Materials", Plenary Lecture in session on "Forward looking to materials science while striding into a New Century", International Union of Materials Research Society (IU-MRS) 5th International Conference on Advanced Materials, Beijing, China, June 13-18, 1999.
124. "Magnetic Tunneling", Moscow International Symposium on Magnetism" (MISM) (devoted to the memory of E.I. Kondorskii), M.V.Lomonosov Moscow State University, June 20 -24, 1999 (talk cancelled due to ill health).
125. "Magnetic Materials for Memories and Field Sensors", 59<sup>th</sup> Physical Electronics Conference, Berkeley, California, July 7-9, 1999.
126. "Magnetic Tunnel Junction Random Access Memory", Briefing to JASON meeting on Spintronics, San Diego, California, July 13, 1999.
127. "Spin dependent tunneling devices", Workshop to Develop a Research Roadmap for Atomic Scale Manufacturing, Charlottesville, Virginia, July 28-30, 1999.
128. "Physics of Magnetic Tunnel Junctions", Frontiers in Magnetism, FIM-99, Stockholm, Sweden, August 12-15, 1999.
129. "Magnetic Tunneling: Physics and Applications", Workshop on Magnetoelectronic Materials and Devices, Buffalo, New York, September 17-18, 1999.
130. "Physics and Applications of Magnetic Tunneling", Magnetism Society of Japan Topical Symposium on Tunneling Magnetoresistance Applications, Tokyo, Japan, November 26, 1999.
131. "Magnetic Tunneling Physics", Nanomagnetism Research Committee, Advanced Technology Institute, Tokyo, November 30, 1999.
132. "An Advanced Magnetic Tunnel Junction Random Access Memory", New Device Association (Soshi-kyo), Tokyo, December 1, 1999.
133. "Magnetic Tunnel Junction Random Access Memory", Tutorial, 1999 Interactive Workshop on Data Storage, Lake Arrowhead, California, December 5-8, 1999.
134. "Magnetic Tunnel Junction Random Access Memory", Condensed Matter and Materials Physics Conference 99, Leicester, England, December 19-22, 1999.
135. "Magnetic Tunneling in Thin Film Structures", International Workshop on the Physics of Low Dimensional Systems in honor of Professor Hans Christoph Siegmann's 65<sup>th</sup> birthday, Oaxaca, México, January 16-20, 2000.
136. "An Advanced Magnetic Random Access Memory using Magnetic Tunnel Junction Storage Elements", American Vacuum Society (AVS) 1<sup>st</sup> International Conference on Microelectronics and Interfaces, Santa Clara, California, February 7-11, 2000.

137. "Spin dependent tunneling for non-volatile random access memory", 2000 American Association for the Advancement of Science (AAAS) Annual Meeting and Science Innovation Exposition, Washington, D.C., February 17-22, 2000.
138. "Magnetic Tunneling", International Symposium on Nanoscale Magnetism and Transport, Sendai, Japan, March 8-10, 2000.
139. "Magnetic Tunneling Junction devices", 28<sup>th</sup> Annual Northern California Electronic Materials Symposium, Sunnyvale, California, April 3, 2000.
140. "Spin-polarized Current and Magnetic Tunneling Junctions", Symposium on Frontiers of Vapor Deposition, Materials Research Society Spring Meeting, San Francisco, April 24-26, 2000.
141. "Sputter deposited magnetic tunneling junctions", Symposium on Magnetic Materials, Structures, and Processing for Information Storage, Materials Research Society Spring Meeting, San Francisco, April 24-27, 2000.
142. "Magnetic Materials in 21<sup>st</sup> Century Technology", Spallation Neutron Workshop on Magnetism, Argonne, Illinois, April 27-28, 2000.
143. "Magnetic Tunneling Devices", Symposium on Magnetic Materials for Magnetoresistive Devices, Ames, Iowa, May 17-18, 2000.
144. [Plenary] "Advanced Magnetic Structures for Technological Applications", Spallation Neutron Source Users Meeting, Washington, May 22-24, 2000.
145. "Magnetic nanostructures", NATO Advanced Study Institute on "Magnetic Storage Systems Beyond 2000", Rhodes, Greece, June 12-23, 2000.
146. "Magnetic tunneling junction devices", Symposium on Spin-Electronics, Halle/Saale, Germany, July 2-6, 2000.
147. "Advances in Storage Technologies", EMSA 2000, 3<sup>rd</sup> European Conference on Magnetic Sensors and Actuators, Dresden, Germany, July 19-21, 2000.
148. "Tunneling memory devices", International Conference on Magnetism, Recife, Brasil, August 6-11, 2000.
149. "MRAM", Magnetism and Magnetic Devices for New Millennium, 10th anniversary of foundation of Korean Magnetic Society, Cheju island, Korea, September 29, 2000.
150. "Novel thin-film magnetic tunneling devices", International Conference on Magnetic Materials, Calcutta, India, October 17-19, 2000.
151. "Spin polarized current in magnetic tunnel junction and spin valve transistor devices", 8<sup>th</sup> NEC Symposium on Fundamental Approaches to New Material Phases, International Symposium on Spin-related quantum transport in mesoscopic systems", Nasu, Japan, October 22-26, 2000.
152. "Magnetoelectronics, spintronics and magnetic thin film materials" 9<sup>th</sup> Biennial Workshop on Advanced Heterostructures, Hawaii, December 3-8, 2000.
153. "Creativity at the Frontier of Science", invited panelist at a Study Committee on Information Technology and Creativity meeting of the National Academy of Sciences, Stanford University, Palo Alto, January 11, 2001.
154. "Magnetic tunneling random access memory", International Symposium on the Basis of Future Electronics (FUET 2001), Oiso, Japan, January 18, 2001.
155. "Instant access memory", IBM Hursley Institute of Technology, February 13-15, 2001.
156. "Magnetoelectronics", Symposium on Current Trends in Magnetism, Madras, India, February 19-22, 2001.
157. "Indirect coupling of magnetic layers via domain wall fringing fields", March Meeting of the American Physical Society, Seattle, Washington, March 12-16, 2001.
158. [Plenary Lecture] "Tunneling into the future: Magnetic Random Access Memory", Inaugural Spring Meeting of the California Unit of the American Physical Society, Irvine California, March 31, 2001.
159. "Magnetic tunneling and applications", Summer school on Spintronics, Maui, Hawaii, May 13-15, 2001.
160. "Magnetic Tunnel Transistors", 1<sup>st</sup> International Conference on Spintronics, Maui, Hawaii, May 15-18, 2001.
161. "Applications of TMR for MRAM and read heads", International Symposium on Sputtering & Plasma Processes, (ISSP 2001), Kanazawa, Japan, June 13-15, 2001.
162. "Magnetic coupling via domain wall fringing fields", Metallic Multilayers 2001 (MML '01), Aachen, Germany, June 22-27, 2001.
163. "Magnetoelectronics", Symposium on Advanced Data Storage Materials, International Conference of Materials for Advanced Technologies (ICMAT 2001), Singapore, July 1-6, 2001.
164. "Magnetic Tunnel Transistors using Si and GaAs collectors", Spins in Nanostructures Workshop, Aspen Center for Physics, Aspen, Colorado, August 5-11, 2001.
165. "A high performance magnetic random access memory using magnetic tunneling junctions", 2001 IEEE Non-volatile Semiconductor Memory Workshop (18<sup>th</sup> NVSMW), Monterey, California, August 12-16, 2001.

166. "Spin dependent transport in magnetic nano-structures", First Seeheim Conference on Magnetism, SCM-2001, Germany, September 7-11, 2001.
167. "Spin Electronics", Annual Meeting of the Industrial Physics Forum, Rochester, New York, October 22-23, 2001.
168. "Instant-on Computing", IEEE Magnetics Society, Santa Clara, January 15<sup>th</sup>, 2002.
169. "Magnetic Tunnel Junctions", Local and Nanoscale Structure in Complex Materials, Santa Fe, New Mexico, January 27-February 1, 2002.
170. [Plenary Lecture] "Physics and Applications of Magnetic Tunnel Junctions", International Conference on Microelectronics and Interfaces, Santa Clara, California, February 11-15, 2002.
171. [Plenary Lecture] "Spintronics!", Workshop on "Surfaces and interfaces on the atomic and nanoscale: semiconductors, magnetic materials and oxides", Grenoble, France, February 14-15, 2002.
172. "Magnetic Tunnel Transistors: A Source of Highly Spin Polarized Electrons", International Colloquium on Magnetic Thin Films and Surfaces (ICMFS), Kyoto, Japan, March 5-8, 2002.
173. "Recent developments in Magnetic Tunneling Magnetoresistive Random Access Memory", Japanese Magnetics Society Symposium, Kameoka Heights, Japan, March 11, 2002.
174. "Spintronics", Strategy for Simulations of Advanced Materials Topical Conference, sponsored by the IBM Academy of Technology and the Deep Computing Institute, IBM Zurich Research Laboratory, Rueschlikon, Switzerland, April 22-24, 2002.
175. "State of the art in Tunneling Materials for Recording Heads", Intermag 2002, Amsterdam, Netherlands, April 29-May 3, 2002.
176. "Magnetic Tunnel Transistors", Workshop on "Prospects in magnetic oxide thin films and hetero-structures", Versailles, France, May 3-4, 2002.
177. "Spin polarized transport in magnetic tunnel junctions and magnetic tunnel transistors", 2002 Gordon Research Conference on Magnetic Nanostructures, Il Ciocco, Italy, May 12-17, 2002.
178. "Spintronics", 7th International Conference on Nanometer-scale Science and Technology) and ECOSS-21 (21st European Conference on Surface Science), Malmoe, Sweden, June 24-28, 2002.
179. [Plenary Talk] "Spintronics", Moscow International Symposium on Magnetism, MISM, M.V. Lomonosov Moscow State University, June 24-27, 2002.
180. "Magnetic tunneling transistors", TFDOM 3, International Conference on "Magnetic devices based on thin film multilayers", Dublin, Ireland, July 11-12, 2002.
181. "Spintronics", Workshop on "The Science and Technology of Spin Transport in Nanostructures", Trieste, Italy, August 19-22, 2002.
182. "Giant magneto-collector current changes in Magnetic Tunneling Transistors", DARPA sponsored Workshop for Spins-in-Semiconductors (SpinS), Delray Beach, Florida, September 30- October 3, 2002.
183. "Magnetic Tunneling Transistors", 8<sup>th</sup> Workshop on Spin Polarization and Magnetic Effects in Nano-Systems, Michigan State University, October 5, 2002.
184. [Plenary Talk] "Spintronic Materials and Devices", Workshop on Trends on Nanostructured Magnetic Materials", Rio de Janeiro, Brazil, October 21-23, 2002.
185. "Materials Impossible: What are the Limits to Useful Properties?", a meeting organized by the Defense Science Research Council, Arlington, Virginia, November 25 and 26, 2002.
186. "Tutorial on Magnetic Tunneling and Applications", Materials Research Society Fall Meeting, Boston, Massachusetts, December 2-6, 2002.
187. "Magnetic Tunnel Transistors: a source of highly spin polarized electron current", Materials Research Society Fall Meeting, Boston, Massachusetts, December 2-6, 2002.
188. "Magnetic tunnel transistors: a source of highly spin polarized electron current", March Meeting of the American Physical Society, Austin, Texas, March 3-7, 2003.
189. "Spintronics", EU RTN/ NEDO/ ESF Working Group Joint Workshop on "Spin Mesoscopics", Enschede, The Netherlands, March 15-18, 2003.
190. "Ultra thin tunnel barriers", NSF/EU NANOAM Meeting on Stable Interfacial and Surface Films, MIT, Boston, March 27-28, 2003.
191. "Spintronics", Colloquium in honor of Prof. Gernot Guentherodt's 60th Anniversary, Aachen, Germany, May 2, 2003.
192. "An advanced Magnetic Random Access Memory", Symposium on "Advanced Memory Technologies", IEEE, Electron Devices Society, Santa Clara Valley, June 20, 2003.
193. "An Advanced Magnetic Random Access Memory based on Magnetic Tunnel Junctions", INSIC (Information Storage Industry Consortium) Alternative Storage Technologies Symposium 2003", Monterey, California, June 24, 2003.

194. "Spintronics", 2<sup>nd</sup> Workshop on "Recent Trends on Nanomagnetism", Istanbul, Turkey, June 30-July 4, 2003.
195. "Spintronics" (mini-lecture course) 2003 Boulder School in Condensed Matter and Materials Physics: Frontiers of Magnetism, Boulder, Colorado, June 30- July 25, 2003. (Three Lectures on July 6, 7 and 8).
196. [Public Lecture] "A new spin on electronics", Boulder School for Condensed Matter and Materials Physics, July 9, 2003.
197. [Plenary Talk] "Magnetic properties of Metallic Superlattices", Focus Session on Epitaxial Superlattices and Nanostructures, The Fifteenth American Conference on Crystal Growth and Epitaxy, ACCGE-15, in conjunction with th 11<sup>th</sup> Biennial (US) Workshop on OMVPE and the 3<sup>rd</sup> International Symposium on Laser and NLO Materials, July 20-24, 2003, Keystone, Colorado.
198. "Spintronics", ASTATPHYS-MEX-2003, 2<sup>nd</sup> International Molecular Engineering Conference, Puerto Vallarta, Mexico, August 24-29, 2003.
199. "Oxides in Magnetoelectronics", 10th International Workshop on Oxide Electronics (WOE 10), Augsburg, Germany, September 11-13, 2003.
200. "Spintronics", Invited panelist, Nanodevices beyond Silicon CMOS, National Nanotechnology Initiative Workshop on Silicon Nanoelectronics and Beyond, Portland, Oregon, October 29-30, 2003.
201. "Spintronics", Stanford CRISM Workshop on Emerging Magnetic Nanotechnologies, Stanford, California, November 7, 2003.
202. "Highly spin polarized tunnel injectors for semiconductor spintronics", International Workshop on Nano-Scale Magnetoelectronics, Nagoya, Japan, November 25-27, 2003.
203. "Tutorial on Magnetic tunnel junctions for magnetic sensors and memories", IWPSD, Madras, India, December 15, 2003.
204. "Hot electron spin injection into GaAs from a magnetic tunnel transistor source", IWPSD, Madras, India, December 16-20, 2003.
205. "Spintronics and Nano-technology", The London Centre for Nanotechnology Showcase Event, The Institute of Child Health, University College London, United Kingdom, January 14, 2004.
206. "Spintronics", IEEE Conference on Nanoscale Devices and System Integration, Miami, Florida, February 15-19, 2004.
207. "Tunnel spin injectors", DARPA - University of New Orleans AMRI Symposium on Nano devices, New Orleans, Louisiana, February 19-20, 2004.
208. [Plenary Lecture] "Spintronics: an international perspective", ESPRC Spintronics theme day, Eynesham Hall, Near Oxford, United Kingdom, March 11, 2004.
209. "Tunnel spin injectors for semiconductor spintronics", Symposium on "Nanostructured magnetic materials", TMS (The Minerals, Metals and Materials Society) Annual Meeting, Charlotte, North Carolina, March 14-18, 2004.
210. "Spintronics", Dynamic Energy Landscapes and Functional Systems (DELFS 04), Santa Fe, New Mexico, March 28-April 2, 2004.
211. [Plenary Lecture] "Spin on Electronics", Materials Congress, Institute of Materials, Minerals and Mining and the Royal Society of Chemistry, London, United Kingdom, March 30- April 1, 2004.
212. "Spin on Electronics", Workshop on Nano-scale Materials: From Science to Technology, Puri, India, April 5-8, 2004.
213. "Magnetic Tunneling Junction Spin Injectors", Symposium on Semiconductor Spintronics, Materials Research Society Spring Meeting, San Francisco, California, April 12-16, 2004.
214. "High TMR and spin polarization materials", Tutorial, MORIS2004, Yokohama, Japan, May 16, 2004.
215. [Keynote speaker] "What has spin got to do with it?", MORIS2004, Yokohama, Japan, May 16-19, 2004.
216. [Keynote speaker] "Global Innovations @ IBM", International Symposium on Promoting Regional Innovation in Korea hosted by the Korean Ministry of Commerce, Industry and Energy (MOCIE), Seoul, July 8, 2004.
217. "Tunnel spin injectors", The 3<sup>rd</sup> International Conference on Physics and Applications of Spin-related Phenomena in Semiconductors (PASPS-III), Santa Barbara, California, July 21-23, 2004.
218. "Highly Spin Polarized Minority Tunneling Current at Room Temperature in Magnetic Tunnel Junctions Containing Ferrimagnetic Fe<sub>3</sub>O<sub>4</sub> Electrodes", International Conference on Ferrites (ICF9), San Francisco, California, August 23 – 27, 2004.
219. [Plenary Lecture] "A new spin on electronics!", International Conference on MEMs, Nanoscience, and Smart Systems (ICMENS), Banff, Canada, August 25-27, 2004.

220. "Spintronic Materials and Technology", Seventh Oxford-Kobe Materials Seminar, Kobe Institute, Japan, September 2-4, 2004.
221. "What's spin got to do with it?", School on Magnetic Nanostructures, Universidad Autónoma de Madrid, Madrid, Spain, September 10-20, 2004.
222. "Tunnel junction spin injectors for semiconductor spintronics", School on Magnetic Nanostructures, Universidad Autónoma de Madrid, Madrid, Spain, September 10-20, 2004.
223. "Highly thermally stable tunnel junctions and tunnel spin injectors using MgO tunnel barriers", International Workshop on Exchange Biased Magnetic Nanostructures. IWEBMN 2004, Anglet, France, September 16-17, 2004.
224. "MRAM – A universal memory", Panelist, Memory Wars: Disruptive Universal Memory Technologies, MIT Club of Northern California, Palo Alto, California, October 14, 2004.
225. "Giant tunneling magnetoresistance in MgO based Magnetic Tunneling Junctions", Workshop on Magnetic Tunneling Junctions and Applications to MRAM and Read Sensors, Tuscaloosa, Alabama, November 4, 2004.
226. "Giant Tunneling Magnetoresistance at Room Temperature with MgO (100) Tunnel Barriers", 49<sup>th</sup> Conference on Magnetism and Magnetic Materials, Jacksonville, Florida, November 7-11, 2004.
227. "Prospects for MRAM", Panelist, SRC Forum on Non-Volatile Memory, Stanford University, November 18-19, 2004.
228. "Domain wall motion in nanomagnetic structures", MRS Symposium on Fabrication and New Applications of Nanomagnetic Structures, MRS Fall 2004 Meeting, Boston, Massachusetts, November 29- December 3, 2004.
229. "Highly spin polarized room temperature tunnel spin injector", 11<sup>th</sup> Advanced Heterostructure Workshop, Kohala Coast, Big Island of Hawaii, December 5-10, 2004.
230. "Spin based electronic devices", 2004 IEDM conference, San Francisco, December 13-15, 2004.
231. "Beyond MRAM!", Anelva MRAM Forum, San Francisco, December 14, 2004.
232. "Tunnel junction spin injectors for semiconductor spintronics", Workshop on Advanced Magnetic Materials, sponsored by Materials and Manufacturing Ontario, Toronto, Ontario, Canada, January 21, 2005.
233. "Novel magnetic memories using spintronic materials and devices", 3rd International Symposium on Nanotechnology (JAPAN NANO 2005), organized by the Nanotechnology Researchers Network Center of Japan, (supported by the Ministry of Education, Culture, Sports, Science and Technology), Tokyo Big Sight (Ariake, Tokyo), February 21 – 22, 2005.
234. "Magnetic race-track storage class memory", "C<sub>60</sub>" Symposium, a 60<sup>th</sup> Birthday symposium for Prof. J.M.D. Coey, Dublin, Ireland, February 24, 2005.
235. "Origin and applications of tunneling spin polarization", Tutorial, American Physical Society March Meeting, Los Angeles, California, March 21-25, 2005.
236. "Highly spin polarized tunnel junctions and tunnel spin injectors", International Magnetism Conference, Intermag 2005, Nagoya, Japan, April 4-8, 2005.
237. "Current driven domain wall motion in magnetic nano-wires: role of temperature", Workshop on "Thermally Assisted MRAM and Thermo-Magnetics", Nagoya, Japan, April 9, 2005.
238. "Tunnel Spin injectors", University of Iowa Workshop on Materials and Devices Incorporating Functional Interfaces, Palm Springs, California, April 10-14, 2005.
239. "Spin dependent tunneling", Fontevraud abbey (Loire valley) France, April 20-22 2005.
240. "Materials for MRAM", 1<sup>st</sup> International Conference on Memory Technology and Design, Giens, France, May 21-24, 2005.
241. [Keynote lecture] "Perspectives in metal spintronics", International School on "Nanomagnetism and Spintronics", European Commission "NanoSciencesTech" conference, Cargèse, Corsica Island, France, May 23- June 4, 2005.
242. Nakamura Lecturer, "The Spin on Electronics: Novel magnetic memories, past, present and future", Materials department, University of California at Santa Barbara, June 3, 2005.
243. "Tunneling spin polarization", 2005 CERC-ERATO International Workshop on "Phase Control of Correlated Electron Systems", The Island of Maui, Hawaii, June 7-11, 2005.
244. "Spintronics: Past, present and future!", 2005 Silicon Nanoelectronics Workshop, 2005 VLSI Technology Symposium, Kyoto, Japan, June 12-13, 2005.
245. [Feature presentation] "Novel spintronic magnetic memories: magnetic race-track memory", Interconnect Focus Center Workshop, College of Nanoscale Science and Engineering, The University at Albany-SUNY and Rensselaer Polytechnic Institute, Albany, New York, June 22-23, 2005.

246. [Plenary] “Spintronic materials and devices”, Moscow International Symposium on Magnetism (MISM-2005), M.V. Lomonosov Moscow State University, Moscow, June 25-30, 2005.
247. “Multiferroic Spintronics”, DARPA Multiferroics & Magneto-Electric Heterostructures Workshop, Arlington, Virginia, June 30, 2005.
248. “Spintronic materials”, 3<sup>rd</sup> International conference on Materials for Advanced Technology (ICMAT-2005), Singapore, July 3-8, 2005. [cancelled]
249. “Spintronic Applications”, International Conference on Nanoscaled Magnetism, Istanbul, Turkey, July 3-8, 2005. [cancelled]
250. “Metal spintronics - experiment”, Spintech III: The International School and Conference on Spintronics, Awaji Island, Japan, August 1-5, 2005.
251. “Spintronic materials and applications”, 6<sup>th</sup> International Wilhelm and Else Heraeus Summer School, Wittenberg, Germany, August 1-12, 2005.
252. “Spintronic materials and applications”, Spintronics workshop sponsored by the Croucher Foundation, Hong Kong, August 15-19, 2005.
253. “Giant Tunneling Magnetoresistance Devices”, Military Sensor Symposium, Johns Hopkins Applied Physics Laboratory, Maryland, August 22-26, 2005. [cancelled]
254. “Spin-dependent tunneling”, International Symposium on Spintronics and Advanced Magnetic Technologies and International Symposium on Magnetic Materials and Applications 2005 (ISAMT/SOMMA2005), Taipei, Taiwan, August 24-27, 2005. [cancelled]
255. “Magnetic race-track memory: a novel storage class memory”, The International Symposium on Physics of Magnetic Materials (ISPM) 2005, Singapore, September 14th-16th, 2005.
256. “Magnetic tunnel junctions – origin of spin polarization of tunneling current”, European “spintronics” Research Training Network sponsored meeting on “Spin dependent transport through nanostructures”, Palace Miercecin, Poznan, Poland, September 25-30, 2005.
257. “Magnetic tunnel junctions – origin of spin polarization of tunneling current”, ESF Exploratory Workshop-Physical and Engineering Sciences on Nano-Spintronics, Wegberg Wildenrath, Germany, September 29-30, 2005.
258. [Plenary] “The Spin on Electronics!”, 52nd Midwest Solid State Conference, Columbia, Missouri, USA, October 8-9, 2005.
259. “Spintronic materials”, 52nd AVS International Symposium, Boston, Massachusetts, October 30 - November 4, 2005.
260. “Magnetic Race-Track Memory”, Workshop on Micromagnetic Imaging at nanometer Resolution, co-sponsored by the National Center for Electron Microscopy and the Advanced Light Source, Berkeley Laboratory, Berkeley, California, November 4, 2005.
261. “Spintronic materials”, SIMD5-NPMS7 -Surface and Interfaces of Mesoscopic Devices and New Phenomena in Mesoscopic Physics, Maui, Hawaii, November 27-December 2, 2005.
262. “Spintronic materials”, International Conference on Frontiers of Materials Science International sponsored by the Frontier Center for Advanced Materials(IFCAM) of the Institute for Materials Research(IMR), Tohoku University, Sendai, Japan, December 6-9, 2005.
263. “Magnetic race-track memory”, Spintronics Summit Workshop, Intel Corporation, Portland, Oregon, January 12<sup>th</sup>, 2006.
264. “Spintronics- novel memories”, Technology Directions Forum on “Circuit design in emerging technologies”, ISSCC '06, San Francisco, California, February 4-8, 2006.
265. “Magnetic Racetrack Memory”, 1<sup>st</sup> RIEC International Workshop on Spintronics - Spin Transfer Phenomena, Laboratory for Nanoelectronics and Spintronics, Res. Inst. Electrical Communication, Tohoku University, Sendai, Japan, February 8-9, 2006.
266. "Growth and understanding giant tunneling magnetoresistance at room temperature in magnetic tunnel junctions with MgO (100) tunnel barriers", American Physical Society March Meeting, Baltimore, Maryland, March 13-17, 2006.
267. “Magnetic race-track memory: a novel storage class memory based on current induced motion of domain walls”, Conference on Spintronics, The Kavli Institute of Theoretical Physics, University of California, Santa Barbara, March 20-24, 2006.
268. “Physics of racetrack memory”, Irvine Workshop on Spintronics, Irvine, California, April 10-11, 2006.
269. “The magnetic racetrack: A storage class memory”, Workshop on "Performance and Scaling of Non-Volatile Memory Materials", IBM Almaden Research Center, San Jose, California, April 14, 2006.

270. "Giant tunneling magnetoresistance and tunneling spin polarization in magnetic tunnel junctions using MgO tunnel barriers", Symposium Q, "Magnetic thin films, heterostructures, and device materials," Materials Research Society Spring Meeting, April 17-21, 2006.
271. "Magnetic Race-Track - a Novel Storage Class Non-Volatile Memory", Symposium G, "Science and technology of nonvolatile materials," Materials Research Society Spring Meeting, April 17-21, 2006.
272. [Plenary] 2006 Wohlfarth lecturer, Plenary lecture at the annual UK Condensed Matter and Materials Physics Conference (CMMP), Exeter, United Kingdom, April 19-21, 2006.
273. "Spintronic devices and materials", Experimentalist of the week, as part of a 4 month long theoretical Program on Spintronics at the Kavli Institute of Theoretical Physics, University of California, Santa Barbara, March 13 - June 23, 2006, week in May, 2006.
274. "Spintronic materials for memory and logic", Nanomaterials for Defense Applications, Virginia Beach, May 1-4, 2006.
275. [Keynote Speaker] "Spintronic materials and devices", International Conference on Quantum Spin Transport in Solids", Singapore, 8-12 May 2006.
276. "State of the art in tunnel devices", Special symposium on "Spin injection and transport in magnetoelectronics", Forum on New Materials, CIMTEC-2006, 11<sup>th</sup> International Ceramics Congress & 4<sup>th</sup> Forum on New Materials, Acireale, Sicily, Italy, June 4-9, 2006.
277. "Recent developments in spintronic materials and devices", US-French workshop on emerging trends in spintronics, Saint Pierre de Chartreuse, France, June 12-14, 2006.
278. "Spin polarized transport", Lectures at "Spins in Solids Summer Academy", University of Virginia, Charlottesville, Virginia, June 19-24, 2006.
279. "Spintronic materials", Second ICAM Symposium on Frontiers in Correlated Matter: Designing Emergent Matter: A Fresh Start?", Snowmass, Colorado, June 22-25, 2006.
280. "The Magnetic Racetrack- a novel storage class memory", International Symposium on Anomalous Quantum Materials (ISAQM2006) and the 5<sup>th</sup> Asia-Pacific Workshop, Okinawa, Japan, June 23-27, 2006.
281. [Plenary] "Spintronics", III Joint European Magnetism Symposia (JEMS-06), JEMS-06, San Sebastian, Spain, 26-30 June 2006.
282. [Plenary] "The future of spintronics", The 2006 Advanced Research Workshop on "Future Trends in Microelectronics: Up the Nano Creek", Crete, Greece, June 26-30, 2006.
283. [Keynote Speaker] "Magnetic Racetrack Memory: a novel storage-class memory based on current induced motion of domain walls", 2<sup>nd</sup> Taiwan International Conference on Spintronics, Toulieu, Taiwan, August 10-12, 2006.
284. "GMR and TMR: technological applications in metal spintronics", Tutorial, 2<sup>nd</sup> Taiwan International Conference on Spintronics, Toulieu, Taiwan, August 10-12, 2006.
285. "Current induced motion of magnetic domain walls in permalloy nanowires: application to the Magnetic Racetrack storage-memory", IFCAM (International Frontier Center for Advanced Materials) Workshop on Spin Currents, Institute for Materials Research, Tohoku University, Sendai, Japan, August 14, 2006.
286. [Plenary] "Magnetic Racetrack Memory: the physics and application of current induced domain wall motion", 19<sup>th</sup> International Colloquium on Magnetic Films and Surfaces (ICMFS) 2006, Sendai, Japan, August 15 - 18, 2006.
287. "Giant tunneling spin polarization and magnetoresistance in tunnel junctions with oxide tunnel barriers", International Conference on Magnetism (ICM2006), Kyoto, Japan, August 20-25, 2006.
288. "Magnetic Race Track Memory", Gordon Research Conference on Magnetic Nanostructures, Queens College, Oxford, United Kingdom, September 3-8, 2006.
289. "The Magnetic Racetrack – a novel spintronic storage-memory", Electron Dynamics in Spin Systems Workshop, 33<sup>rd</sup> Annual SSRL User's Meeting & Workshops, Stanford Synchrotron Radiation Laboratory, Stanford University, October 11, 2006.
290. "Metal spintronics: recent developments", Joint US-Ireland Workshop in Nanotechnology, Belfast, Northern Ireland, October 23-24, 2006.
291. "Spintronic materials and devices", WE-Heraeus School on "Spin Torque in Magnetic Nanostructures", Bad Honnef, Germany, October 22-26, 2006.
292. [Plenary] "The Magnetic Racetrack", Joint Symposium of the Dutch Nano- and Microtechnology initiatives, NanoNed and MicroNed, Eindhoven, The Netherlands, November 16-17, 2006.
293. "The Magnetic race-track: a novel spintronic based storage-class memory technology", International workshop on New Non-volatile Memory Technology, ITRI, Hsin-Chu, Taiwan, November 20 -21, 2006.
294. "Current induced precession of magnetic domain walls", 12<sup>th</sup> Advanced Heterostructure Workshop, Hawaii, December 3-8, 2006.



295. "Current-driven domain wall motion in metallic nanowires", 10th Joint MMM/Intermag Conference, Baltimore, Maryland, January 7-11, 2007.
296. "Magnetic Tunneling Junctions with Crystalline MgO Tunneling Barriers and Well Defined Interfaces", The 34th annual Physics and Chemistry of Semiconductor Interfaces Conference (PCSI-34), Salt Lake City, Utah, January 14-18, 2007.
297. "Current induced motion of domain walls", Spins in Nanostructures: Dynamics, Spectroscopy, Manipulation and Control, Aspen Center for Physics Winter Conference, Aspen, Colorado, January 14-20, 2007.
298. "Magnetic Racetrack Memory: Physics of current induced motion of magnetic domain walls". Quantum Sensing and Nanophotonic Devices IV" conference, SPIE Optoelectronics 2007 International Symposium in San Jose, California, January, 20-25, 2007.
299. "Spin polarized current in MgO based Magnetic Tunnel Junctions", 2nd RIEC International Workshop on Spintronics, Laboratory for Nanoelectronics and Spintronics, Research Institute for Electrical Communication, Tohoku University, Sendai, Japan, February 15-16, 2007.
300. "Precessional motion of domain walls in magnetic nanowires", International Workshop on Spin Current, Institute for Materials Research, Tohoku University, Sendai, Japan, February 19-20, 2007.
301. "Spintronics", International Workshop on Advanced materials and technologies in nano and oxide electronics (AMTNOE 2007), New Delhi, India, February 19-22, 2007.
302. "Spin transport across interfaces", Tutorial entitled "Magnetism at the nanoscale", the 2007 American Physical Society (APS) March Meeting, March 5-9, Denver, Colorado, 2007.
303. [Distinguished Lecture] "The Spin on electronics!", Annual Moti Lal Rustgi Memorial Lecture for the 2006-2007 academic year, University of Buffalo, Buffalo, New York, April 6, 2007.
304. "The Magnetic Racetrack Memory", Symposium on Nanoscale Magnetics and Device Applications, Materials Research Society Spring Meeting, San Francisco, California, April 9-13, 2007.
305. "Spintronics!", Panelist, 1<sup>st</sup> Tohoku University International Innovation Forum, San Mateo, California, April 26-27, 2007.
306. "Spintronic materials and devices", 2007 CERC International Symposium Highlights and Perspectives of Correlated Electron Systems - From Physics to Applications, Akihabara Convention Hall, Tokyo, Japan, May 22-25, 2007.
307. "Magnetic tunneling junctions", International Conference on Nanospintronic Design and Realization 2007, Dresden, Germany, May 21-25, 2007. [not able to attend].
308. [Key speaker] "Magnetic Racetrack Memory: physics of current induced domain wall motion", 2007 International Center for Quantum Structures (ICQS) Workshop on Nanomagnetism and Spintronics, Beijing and Shanghai, China, June 11-16, 2007.
309. "Spintrack memory", Innovative Mass Storage Technologies (IMST) Conference 2007, Twente, Netherlands, June 18-20, 2007.
310. "Physics of current induced motion of domain walls for application to the Racetrack Memory", sixth International Storage Technology Symposium ( ISTS'07 ), Kalamata, Greece, June 17-22, 2007.
311. [Plenary] "The Magnetic Racetrack Memory: a novel memory-storage device", International Conference on Nanoscale Magnetism (ICNM-2007), Istanbul, Turkey, June 25-29, 2007.
312. "Spin momentum transfer", Summer school on magnetic heterostructures, Bochum, July 9-13, 2007. [not able to attend].
313. "Racetrack Memory: a magnetic hard disk drive on a chip", Defense Science Research Council (DSRC) 2007 Summer Conference, Santa Cruz, California, July 18-19, 2007.
314. "Spintronic Memories", DARPA Strategy Session for Advanced Spintronic Logic and Memory, Santa Cruz, California, July 20, 2007.
315. [Plenary Tutorial] "The Spin on Electronics!", 2007 4<sup>th</sup> Asia Forum on Magnetics and 3<sup>rd</sup> Taiwan International Conference on Spintronics (TICSpin), Douliu, Taiwan, July 31<sup>st</sup>, 2007.
316. "The Racetrack memory: Current and field induced precessional motion of domain walls", 3<sup>rd</sup> Taiwan International Conference on Spintronics (TICSpin), Douliu, Taiwan, July 31-August 2<sup>nd</sup>, 2007.
317. "Racetrack Memory", 1<sup>st</sup> WUN International conference on Spintronic Materials and Technology (WUN-SPIN07), York, United Kingdom, August 7-10, 2007.
318. "Magnetoresistance in Magnetic Tunnel Junctions with MgO Tunnel Barriers", 2007 Meeting of the Military Sensing Symposia (MSS) Specialty Group on Battlefield Acoustic & Seismic Sensing, Magnetic & Electric Field Sensors, The Johns Hopkins University, Laurel, Maryland, August 21-23, 2007.
319. "Current induced motion of domain walls: application to the Magnetic Racetrack", 3<sup>rd</sup> Seeheim Conference on Magnetism, Frankfurt, Germany, August 26-30, 2007 [not able to attend].

320. [Plenary] “Spintrack Storage-Memory”, International Symposium on Functional Materials for Non-Volatile Memories, Materials Today Asia Conference, Beijing, China, September 3-5, 2007.
321. “The Spin on Electronics!”, IBM-University of Tokyo Forum, Yasuda Auditorium, Hongo Campus, University of Tokyo, Tokyo, Japan, September 12<sup>th</sup>, 2007.
322. “Racetrack Memory”, IEEE CMOS Memory Symposium, San Jose, California, September 20, 2007 [given by Xin Jiang].
323. "Giant TMR and future nonvolatile memory", 2007 International Conference on Solid State Devices and Materials (SSDM 2007), September 18-21, 2007.
324. “The Racetrack Memory”, Nanomagnetism Workshop, ALS User’s Meeting, organized by the Advanced Light Source and the Molecular Foundry, Berkeley, California, October 4-6, 2007.
325. [Plenary] “Racetrack Memory”, IEEE Sixth Metallic Multilayer Symposium Perth, Western Australia, October 14-19, 2007.
326. “The Racetrack Memory”, Fall Research Review Meeting, Center for Magnetic Recording Research (CMRR), University of California, San Diego, California, October 31-November 1<sup>st</sup>, 2007.
327. “Magnetic Racetrack Memory”, Symposium on Nanoscale Magnetic Materials and Applications, Materials Research Society Fall meeting, Boston, Massachusetts, November 26-30<sup>th</sup>, 2007.
328. “Current induced dynamics of domain wall motion”, Dreikoenigstreffen Magnetismus '08 - New Concepts in Spin Dynamics, Physikzentrum, Bad Honnef, Germany, January 7-9<sup>th</sup>, 2008.
329. “Racetrack Memory”, International Conference on Computational Materials Science (ICCMS 2008), Morelos, Mexico, February 4-7<sup>th</sup>, 2008.
330. “Racetrack memory: recent developments”, 3<sup>rd</sup> International Spin Currents Workshop, University of Tohoku, Sendai, Japan, February 18-19<sup>th</sup>, 2008.
331. "Spin-Dependent Tunnelling Phenomena in Magnetic Tunnel Junctions with MgO Tunnel junctions”, March 2008 Meeting of the American Physical Society, New Orleans, Louisiana, March 10-14<sup>th</sup>, 2008.
332. [Plenary] “The Spin on Electronics!”, The 36<sup>th</sup> Annual Electronic Materials Symposium, San Jose, California, April 11, 2008.
333. [Keynote] “Future of spin momentum transfer devices: MRAM and Racetrack Memory”, 2008 Advanced Semiconductor Manufacturing Conference (ASMC), Boston, Massachusetts, May 7-9<sup>th</sup>, 2008.
334. “Racetrack Memory”, The American Conference on Neutron Scattering (ACNS), Santa Fe, New Mexico, May 11-15, 2008.
335. “Racetrack Memory”, Spinor2008, Workshop on spin and charge transport in nanostructures, Norwegian Academy of Science and Letters, Oslo, Norway, May 14-16, 2008.
336. “Racetrack Memory”, Electron, Ion, and Photon Beam Technology & Nanofabrication (EIPBN), Portland, Oregon, May 26-30, 2008.
337. [Plenary] 9<sup>th</sup> International Conference on Nanostructured Materials - Nano 2008, Rio de Janeiro, , June 1-6, 2008.
338. [Plenary] “Exotic phenomena in spintronic nanostructures: from giant spin dependent tunneling to unconventional ferromagnetism”, 14<sup>th</sup> International Conference on Solid Films and Surfaces (ICSFS-14), Trinity College Dublin, Ireland, June 29-July 4<sup>th</sup>, 2008.
339. “Spin polarized transport in oxide heterostructures”, Workshop on Frontiers of Complex Oxides, International Center for Materials Research (ICMR), University of California, Santa Barbara, July 7 – 11<sup>th</sup>, 2008.
340. [Plenary] “Magnetic Racetrack Storage-Class Memory”, Plenary session on “Life beyond Flash – new non-volatile memory technologies”, 2008 Flash Memory Summit & Exhibition, Santa Clara, California, August 12-14, 2008.
341. [Plenary] “High density information storage”, International Conference on Electronic Materials, (biennial conference of the International Union of Material Research Societies, IUMRS), Sydney, Australia, July 28-August 1<sup>st</sup>, 2008.
342. “Current and field induced domain wall dynamics in magnetic nanowires”, Nanotechnology Network Meeting, Campbelltown Campus, University of Western Sydney (UWS), Australia, July 29<sup>th</sup>, 2008.
343. [Plenary] “Racetrack Memory”, International Workshop on Innovative Materials and Their Applications, Australian Institute for Innovative Materials, University of Wollongong, August 1, 2008.
344. “Current and field induced precessional motion of domain walls in magnetic racetracks”, ISQM TOKYO '08, The 9<sup>th</sup> International Symposium on Foundations of Quantum Mechanics in the Light of New Technology, Hatoyama, Saitama, Japan, August 25-28<sup>th</sup>, 2008.

345. "Complex oxide heterostructures: our current understanding and challenges for the future!", Discussion Leader, Complex Oxide Heterostructure Session, Gordon Research Conference on Magnetic Nanostructures, Aussois, France, August 31- September 5, 2008.
346. [Plenary] [IEEE Distinguished Lecturer Presentation] "Racetrack Memory!", EPSRC UK-China Workshop on Nanospintronics, London, United Kingdom, September 9, 2008.
347. "Metallic spintronic materials and devices", 2<sup>nd</sup> International Summer: Physics of Functional Micro- and Nanostructures, Hamburg, Germany, September 8-20<sup>th</sup>, 2008.
348. "Spintronic materials and devices", International Summer School on "Magnetic phase transitions", The Swedish archipelago, September 14-19<sup>th</sup>, 2008 [cancelled].
349. [Keynote] "Spintronic materials and devices", Nanotech Northern Europe 2008 Conference, Copenhagen, Denmark, September 23-25, 2008.
350. "Progress towards Racetrack Memory", The Fourth Taiwan International Conference on Spintronics (TICSpin), National Taiwan Normal University, KungKuan Campus, Taipei, Taiwan, October 2-4, 2008.
351. [Keynote] "Racetrack Memory", International Wafer-Level Packaging Conference--Wafer-Level, 3D, Stacked Packaging, and Chip Scale, San Jose, California, October 15-16, 2008.
352. "Domain wall motion by spin-torque and its application for storage devices", IEEE Nanotechnology Materials and Device Conference 2008 (NMDC2008), Kyoto, Japan, October 20-22, 2008.
353. "Spintronic materials and devices", 1 week stay during month-long workshop on "Spin Transport in Condensed Matter", organized by the Yukawa Institute for Theoretical Physics, Kyoto, Japan, mid October to mid November 2008.
354. "The Spin on Electronics", International Trade Partners's Conference, (ITPC 2008), Big Island of Hawaii, November 3-6, 2008.
355. "Current induced magnetization dynamics in magnetic nanowires: towards the development of Racetrack Memory", ITRS ERM Workshop on Materials for Spin Logic, Austin, Texas, November 10, 2008.
356. [Keynote] "The Spin on Electronics!", Special lecture at a Symposium in honor of my receiving the 2008 Gutenberg Research Award, Mainz University, Germany, November 25, 2008.
357. "Racetrack Memory", Magnetic Single Nano-object Workshop and School 2008 (M-SNOWS'08), Nancy, France, November 23-28, 2008.
358. [IEEE Distinguished Lecturer Presentation] "Racetrack Memory", Spintronics School, Shijyo-nawate, Japan, December 3-4, 2008.
359. [IEEE Distinguished Lecturer Presentation] "Racetrack Memory", Forum on NanoMagnetism, Toyota Technological Institute, Nagoya, Japan, December 5, 2008.
360. "Spintronic Materials and Devices of the Future", Symposium entitled "*Twenty years of spintronics*" in honour of Prof. Albert Fert, Paris, France, December 8-9, 2008.
361. "Racetrack Memory", Asian Magnetics Conference, Busan, Korea, December 10-13, 2008.
362. "Spin torque driven dynamics of magnetic domain walls in nanowires", Condensed Matter winter conference, Aspen Center for Physics, Aspen, Colorado, January 11-17<sup>th</sup>, 2009.
363. "Experiments: summary and discussion", Disussion Leader, Topical Workshop on Spin-Caloritronics, Leiden, The Netherlands, February 9-13, 2009.
364. "Racetrack Memory: a current controlled magnetic domain wall based storage class memory", Trends in Nanoscience 2009, Kloster Irsee, Germany, February 28 - March 4, 2009.
365. "The spin on electronics!", US-Indo Conference on Advances in Nanomagnetism, IIT Bombay, India, March 1-3, 2009.
366. "Exotic phenomena in spintronic nanostructures: from giant spin dependent tunneling to unconventional ferromagnetism", AIST-RIKEN Joint Workshop on Emergent phenomena of Correlated Materials, Bankoku Shinryoukan, Okinawa Island, Japan, March 4-7, 2009.
367. "Racetrack Memory: Current induced motion of domain walls", Spintronics Tutorial, American Physical Society March Meeting, Pittsburgh, Pennsylvania, March 15, 2009.
368. "Spintronic Memories: MRAM and Racetrack Memory", IFF Spring School, Jülich, Germany, March 9-20, 2009.
369. "Spintronic memories", 22<sup>nd</sup> IEEE International Conference on Microelectronic Test Structures, Oxnard, California, March 30<sup>th</sup> - April 2<sup>nd</sup>, 2009.
370. "Spintronic Memories", 10<sup>th</sup> MR Symposium, Wetzlar, Germany, March 31<sup>st</sup> - April 1<sup>st</sup>, 2009 [cancelled].
371. "Novel oxide-based spintronic materials", Symposium on Novel functional properties at Oxide-Oxide interfaces, Spring '09 Materials Research Society (MRS) Meeting, April 13-17, 2009.
372. "Spintronic materials and nanodevices", Symposium on Novel Materials, Berlin, Germany, April 29, 2009.

373. “Racetrack Memory”, Intermag 2009 Conference, sponsored by the IEEE Magnetics Society, Sacramento, California, May 4-8, 2009.
374. “Domain wall magnetization dynamics”, IAS Research Workshop on "New Frontiers in Spintronics", Institute for Advanced Studies , Hebrew University, Jerusalem, Israel, May 4-7, 2009 [cancelled].
375. “Racetrack Memory”, Optical Data Storage conference, Lake Buena Vista, Florida, May 10-13, 2009 [cancelled].
376. “Racetrack Memory: current induced domain wall dynamics”, The Peter Levy Symposium, New York University, May 15<sup>th</sup>, 2009.
377. “The Spin on Electronics!”, IISc-Physics Centenary Conference on “Frontiers and Directions in Condensed Matter Physics (FCMP)”, Indian Institute of Science (IISc), Bangalore, India, May 25-29, 2009.
378. “Spintronics”, Workshop on Spin Transport in Nanostructures, Spin-Up 2009, Longyearbyen, Svalbard, Norway, May 31<sup>st</sup> - June 4<sup>th</sup>, 2009.
379. [Plenary] “Domain wall dynamics”, Nanomat 2009 Conference, Lillehammer, Norway, June 15-19, 2009.
380. “Racetrack Memory: a novel three dimensional storage device”, Moris 2009, Awaji, Hyogo, Japan, June 16-18, 2009.
381. [Plenary] “The Spin on Electronics!”, 2009 Device Research Conference, University Park, Pennsylvania, June 22-24, 2009.
382. [Keynote] “Spintronic Materials and Devices”, Symposium on "Nanostructured Magnetic Materials and their Applications", International Conference on Materials for Advanced Technologies, ICMAT 2009, Singapore, June 28 - July 3, 2009.
383. [Distinguished Speaker] “Spintronics!”, Conference on “Concepts of condensed matter physics and device innovation”, Official Inauguration of the School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore, July 20-22, 2009.
384. [Plenary] “Domain wall motion by current pulses”, International Conference on Magnetism 2009 (ICM'09), Karlsruhe Institute of Technology, Karlsruhe, Germany, July 26-31, 2009.
385. [Keynote] “Spin on electronics!”, Techniche 2009, IIT Guwahati's eleventh annual techno - management festival, September 3-6, 2009.
386. [Keynote] “Spintronics!”, Trends on NanoTechnology (TNT) conference, Barcelona, Spain, September 7-11, 2009.
387. [Plenary] “Domain wall dynamics”, "Nicolas Cabrera"-2009 International Summer School on "Spin transport and dynamics in nanostructures”, Miraflores-Madrid, Spain, September 14-18, 2009.
388. [Plenary] “Spintronic materials and nano-devices”, 11<sup>th</sup> International Conference on Advanced Materials (ICAM 2009), Rio de Janeiro, Brazil, September 20-25, 2009.
389. [Keynote] “Spintronics for the rest of us”, the XYZ talk, Fall meeting of the Electrochemical Society, the Society for Solid-State and Electrochemical Science and Technology, Vienna, Austria, October 4-9<sup>th</sup>, 2009. [cancelled].
390. “Racetrack memory”, Workshop on “Advances in Magnetic Nanostructures”, Vail, Colorado, October 4-9, 2009.
391. “Spintronics”, Symposium on "Nano-Magnetism and Beyond" in honor of Sam Bader, Chicago, Illinois, October 10, 2009 [cancelled].
392. “Racetrack Memory: a novel storage class spintronic memory”, AVS (American Vacuum Society) 56<sup>th</sup> International Symposium and Exhibition, San Jose, California, November 8-13<sup>th</sup>, 2009.
393. [After-dinner speech] “Technological Innovations that could change the world!”, Workshop on New frontiers in X-ray Microscopy, BESSY, Berlin, Germany, November 10-11<sup>th</sup>, 2009.
394. “Racetrack memory: a storage class memory”, International Workshop on Non-Volatile Memory, Hsunchu, Taiwan, November 16-17, 2009.
395. “Domain Wall Dynamics”, International Symposium on the Dynamics of Magnetic Vortices, Hamburg, Germany, November 29-December 2, 2009.
396. [Award Lecture: International Materials Prize] “The Spin on Electronics! Spintronic memories – past, present and future”, Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Bangalore, India, December 11<sup>th</sup>, 2009.
397. [Plenary] “The Spin on Electronics!”, Fifteenth International Workshop on The Physics of Semiconductor Devices, New Delhi, India, December 15-19, 2009.
398. “Ferromagnetism in N doped MgO”, Oxide-based Materials and Devices Conference, SPIE International Symposium on Integrated Optoelectronic Devices, San Francisco, California, January, 2010.
399. “Controllable resistive switching in nitrogen doped MgO”, Resistive Switching and Memristors, University of California, Davis, California, January 8 – 10<sup>th</sup>, 2010.

400. [Award Lecture] “The Spin on Electronics! Memories, past, present and future”, Barkhausen Award Ceremony, Technical University of Dresden, Dresden, Germany, January 15<sup>th</sup>, 2010.
401. “Synaptic properties of magnetic tunnel junctions”, Special Symposium on “Magnetism in ITRS” 11th Joint MMM/Intermag Conference (MMM/Intermag 2010), Washington, DC, January 18-22, 2010.
402. “Spintronic nanomaterials and nanodevices”, International Workshop on Spin Current and Spin Caloritronics, Institute for Materials Research (IMR), Tohoku University, Sendai, February 8-10, 2010.
403. [Plenary and closing talk of conference] “The Spin on electronics: Racetrack Memory”, International Conference on Nanoscience and Nanotechnology (ICONN 2010), Sydney, Australia, February 22-26<sup>th</sup>, 2010.
404. [Plenary] “Spin on Electronics!”, China Semiconductor Technology International Conference (CSTIC 2010), in conjunction with SEMICON China, Shanghai, China, March 18-19<sup>th</sup>, 2010.
405. “Racetrack Memory: a current controlled shift register”, International Workshop on Exploratory Research for Semiconductor Devices and VLSI packaging, Institute of Microelectronics, Chinese Academy of Sciences, Beijing, China, March 22, 2010.
406. [Tutorial] “Spintronic nanomaterials and devices for memory and logic”, International Symposium on Quality and Electronic Design (ISQED), San Jose, California, March 22-24<sup>th</sup>, 2010.
407. “Domain wall dynamics in magnetic racetracks”, Fourth Seeheim Conference on Magnetism (SCM IV), Frankfurt, Germany, March 28<sup>th</sup>- April 1<sup>st</sup>, 2010.
408. 2010 Materials Research Society Meeting, San Francisco, April 5-9, 2010.
409. “Spintronics/ Oxide Nanodevices”, Workshop on Nano-optics, Plasmonics, and Advanced Materials, NIST, Gaithersburg, Maryland, April 19-22<sup>nd</sup>, 2010.
410. “Spintronic materials and devices”, Experimenter-of-the-week, “Collective Spin Dynamics in Nanostructures”, The Kavli Institute of Theoretical Physics China, Beijing, China, April 26<sup>th</sup> - July 2<sup>nd</sup>, 2010.
411. Canadian Institute for Advanced Studies (CIFAR) Nanoelectronics program meeting, Napa Valley, California, May 11-13<sup>th</sup>, 2010.
412. [Plenary] “Spintronics: novel materials and devices”, E-MRS (European Materials Research Society), Strasbourg, France, June 7-11<sup>th</sup>, 2010.
413. [Plenary] “Racetrack Memory”, International Symposium on Integrated Functionalities (ISIF 2010), San Juan, Puerto Rico, June 13-16, 2010.
414. [Keynote Lecture] WUNSpin, "Spintronic Material and Devices", Urbana, Illinois, June 21-23, 2010.
415. “Domain wall dynamics”, IV Euro-Asian Symposium on Magnetism: Nanospintronics, EASTMAG -2010, Ekaterinburg, Russia, June 28<sup>th</sup> - July 2<sup>nd</sup>, 2010. [cancelled]
416. [Plenary] “Spintronics!”, 14th Czech and Slovak Conference on Magnetism - CSMAG'10, Kosice, Slovak Republic, July 6-9<sup>th</sup>, 2010.
417. “Metal-insulator transitions in complex oxides”, Complex Oxide Workshop, Charlottesville, Virginia, August 23-24<sup>th</sup>, 2010.
418. [Plenary] “The Spin on Electronics!”, International Conference on Nanoscale Magnetism" (ICNM-2010), Istanbul, Turkey, September 28<sup>th</sup>- October 2<sup>nd</sup>, 2010.
419. [Keynote] “Racetrack Memory: roles of domain wall momentum”, International workshop on “Laser-induced magnetization dynamics in nanostructures”, Stoos, Switzerland, October 6-7, 2010.
420. “Spintronic memory and logic nanodevices”, Workshop on "Quantum Spintronics", Acquafredda di Maratea, Italy, October 17-21, 2010.
421. “Spintronics”, 2010 International Symposium on Spintronic Devices and Commercialization (ISSDC'2010), Beijing, China, October 21-24, 2010.
422. “Domain wall dynamics”, Symposium on "magnetic and magneto-electronics materials", 9th Annual Meeting of the Brazilian Materials Research Society - SBPMat, Ouro Preto, Minas Gerais State, Brazil, October 24-28<sup>th</sup>, 2010.
423. “Metallic Spintronics [3 lectures]”, PASPS V, “Advanced School on spintronics and quantum information processing”, Sao Carlos, Sao Paulo State, November 1-5<sup>th</sup>, 2010.
424. [Keynote Speaker] “Racetrack Memory: an innately three-dimensional storage-class device”, Annual Conference of the Chinese American Information Storage Society (CAISS), Milpitas, California, November 6, 2010.
425. [Plenary] “Low energy nanodevices using spin currents”. The Saudi International Nanotechnology Conference 2010, Riyadh, Saudi Arabia, November 29-30, 2010
426. [Plenary] “The Spin on Electronics!”, Vijyoshi (Vigyan Jyoti Shivir) program, Bangalore, India, December 4-6, 2010.

427. [Opening Lecture] “The Spin on Electronics!: Novel memory and logic devices”, Winter School in Chemistry and Physics of Materials, International Centre for Materials Science, Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Bangalore, India, December 6-10, 2010.
428. [Plenary] ICAUMS2010, International Conference of AUMS, Jeju Island, Korea, December 6-8, 2010.
429. [Plenary] Science Conclave, IIT Allahabad, Allahabad, India, December 11-14, 2010.
430. “Dynamics of magnetic domain walls under their own inertia”, “Another Spin in the Wall” Symposium, TU/Eindhoven, The Netherlands, January 27, 2011.
431. [Plenary] 4th Annual Cheetham Lecturer, Materials Research Outreach Symposium, University of California, Santa Barbara, MROP 2011, Santa Barbara, California, February 2-3, 2011.
432. First ASRC Workshop, Advanced Science Research Center (ASRC), Japan Atomic Energy Agency (JAEA), Tokai, Japan, March 14-17, 2011 [cancelled due to March 11, 2011 earthquake in Sendai, Japan].
433. 11th Symposium on “Magnetoresistive Sensors and Magnetic Systems”, Wetzlar, Germany, March 29-30, 2011.
434. “ImaginedNano”, Bilbao, Spain, April 11-14, 2011. [Cancelled]
435. 2011 Frontier Spintronics / Nanoelectronics workshop, Hsinchu, Taiwan, April 24, 2011.
436. [Plenary] “The state of the art of Racetrack Memory: a high performance, storage class memory”, IEEE International Magnetism Conference 2011 (Intermag2011), Taipei, Taiwan, April 25-29, 2011.
437. Lorentz Workshop on Spin Caloritronics, Leiden, The Netherlands, May 9-13, 2011.
438. “Spintronics”, International Conference on Physics, Chemistry and Application of Nanostructures, Minsk, Belarus, May 24-27, 2011. [Cancelled].
439. International Summer school on “Quantum properties in anomalous metals and correlated systems”, Venice, Italy, May 29-June 4, 2011.
440. “Domain wall dynamics”, International Workshop on “Recent Trends in Nanomagnetism, Spintronics and their Applications” (RTNSA-2011), Ordizia, San Sebastian, Spain, June 1-3<sup>rd</sup>, 2011.
441. “Industrial Research”, Special session, International Workshop on “Recent Trends in Nanomagnetism, Spintronics and their Applications” (RTNSA-2011), Ordizia, San Sebastian, Spain, June 3<sup>rd</sup>, 2011.
442. “Racetrack Memory: a novel spintronics solid state memory-storage device”, 2011 CMOS Emerging Technologies Workshop, Whistler, British Columbia, Canada, June 15-17, 2011.
443. “Advanced Oxide Thin Films and Heterostructures”, MORIS-2011, Nijmegen, The Netherlands, June 21-24, 2011.
444. “Electric Field Induced Metallization of Vanadium Dioxide and Vanadium Sesquioxide on Ultrashort Timescales”, ICMAT 2011, International Conference on Materials for Advanced Technologies, Singapore, June 26- July 1, 2011.
445. “Spin on Nano!”, Ulaanbaatar/Taipei/Mainz Workshop in “Frontier of Sciences and Technologies”, National Mongolia University, Ulaanbaatar, Mongolia, July 18 (July 18-22), 2011.
446. “Racetrack Memory: dynamics of domain wall motion”, ISIF, August 2011, Cambridge, United Kingdom, August 1-4, 2011.
447. [Leader] “Spin on Electronics!”, (Plenary Lecture), Asia Science Camp 2011 (SC2011), Daejeon, Korea, August 7-13, 2011.
448. [Leader] “Innovation in an Industrial Research Laboratory”, (2 camps) Asia Science Camp 2011 (SC2011), Daejeon, Korea, August 7-13, 2011.
449. “Spintronics”, IEEE Optical MEMS and Nanophotonics Conference 2011, Istanbul, Turkey, August 8-11, 2011 [cancelled].
450. [Plenary] Moscow International Symposium on Magnetism (MISM-2011), Moscow, Russia, August 21-25, 2011. [cancelled].
451. “Material aspects in advanced magnetic storage devices”, ASPIMATT School on “Advanced Spintronic Materials and Transport Phenomena”, Villa Denis, Diemerstein/Kaiserslautern, August 24-27, 2011.
452. 7th Kalamata Symposium, Kalamata, Greece, September 4-10, 2011. [Cancelled]
453. Workshop on “Superconducting hybrids: from conventional to exotic”, Grenoble, France, September 7-10, 2011. [Cancelled].
454. “Present and Future of Nanotechnology: IT Industry Perspective”, 5<sup>th</sup> Anniversary celebration of founding of the London Center for Nanotechnology, London, United Kingdom, September 27<sup>th</sup>, 2011.
455. [Guptill Memorial Lecture 2011] “Spin on Nano!”, Dalhousie University, Halifax, Canada, September 30, 2011.
456. “Spin dependent tunneling”, and “Electric field induced resistance changes in oxides”, 2 Lectures, International School of Oxide Electronics, Cargèse, Corsica, France, October 3-15, 2011.

457. "Racetrack Memory", 11th Non-Volatile Memory Technology Symposium (NVMTS 2011), Shanghai Institute of Micro-system and Information Technology, CAS, (SIMIT), Shanghai, China, November 7-9, 2011.
458. Workshop on "Magnetism: Practice and Theory", Bangalore, India, November 30-December 4, 2011. [Cancelled].
459. [Special Guest Speaker] "Racetrack Memory: the motion of domain walls in response to spin currents", International Symposium of Global COE: Materials Integration and the 2<sup>nd</sup> International Symposium on Advanced Synthesis and Processing Technology for Materials (ASPT2011), Sendai, Japan, December 1-2, 2011.
460. "Racetrack Memory: a high-performance, low-cost, non-volatile memory based on magnetic domain walls", IEEE International Electron Devices Meeting, Washington, DC, December 5-7, 2011.
461. [Guest of Honor/ Plenary] "Spin on Nano!", 4th Bangalore Nano with the Focal Theme of the Event "Nanoscience & Technology at the Cutting Edge", Yelahanka, Bangalore, India, December 8-9, 2011.
462. "Electric Field-Induced Conductivity Switching in Vanadium Sesquioxide Nanostructures", FIRST-QS2C Workshop on "Emergent Phenomena of Correlated Materials", Okinawa, Japan, Dec. 12-15, 2011.
463. [Plenary] "The Spin on Electronics! - Science and Technology of spin currents in nano-materials and nano-devices", The 6th International Conference of the Africa Materials Research Society, Victoria Falls, Zimbabwe, Africa, December 11-16, 2011.
464. "Racetrack Memory 2.0: a high-performance, storage class memory using magnetic domain-walls manipulated by current", Spintronics Workshop, Tohoku, Japan, January 10-13, 2012.
465. "Highly efficient domain wall depinning using thermally created spin currents", RIKEN-APW-APCTP joint workshop on "Recent trends in condensed matter physics", Wako, Saitama, Japan, January 14-16<sup>th</sup>, 2012.
466. "Racetrack Memory 2.0: a high-performance, storage class memory using perpendicularly magnetized domain-walls manipulated by current", 2<sup>nd</sup> CSIS International Symposium on Spintronics-based VLSIs and the 8th RIEC International Workshop on Spintronics, Sendai, Japan, on February 2-3, 2012.
467. "How to turn an insulator into a metal?", RAK-CAM Fourth International Workshop on Advanced Materials (IWAM-2012), Ras Al Khaimah, February 19-21, 2012.
468. "Turning Insulators into Metals!", Workshop on "Strongly Correlated Systems", Solid State and Structural Chemistry Unit, Indian Institute of Science (IISc), Bangalore, India, February 21<sup>st</sup>, 2012.
469. "Racetrack Memory 2.0: a high-performance, storage class memory using magnetic domain-walls manipulated by current", Orange County Workshop, Orange County, India, February 22-26, 2012.
470. "Emerging Spintronics Memories", Spintronics Tutorial, American Physical Society Meeting, Boston, Massachusetts, February 27-March 2, 2012 (Tutorials on Sunday February 26<sup>th</sup>).
471. [Adler Prize Lecture] "Racetrack Memory: a high-performance, storage class memory using magnetic domain-walls manipulated by current", American Physical Society Meeting, Boston, Massachusetts, February 27-March 2, 2012.
472. "Interface current driven domain wall motion in perpendicularly magnetized Co/Ni nanowires", 2nd UK-Swiss Zermatt Winter Workshop on "Frontier Experiments in Quantum Matter", Zermatt, Switzerland, March 12-14, 2012.
473. [Keynote] "Racetrack Memory 2.0", IEEE Nanotechnology Council Symposium on "Emerging Non-volatile Memory Technologies", Santa Clara, California, April 6<sup>th</sup>, 2012.
474. "MRAM and Racetrack Memory", Tutorial, Materials and Physics for Emerging Non-Volatile Memory (NVM) Symposium, MRS 2012 Spring Meeting, San Francisco, California, April 9-13, 2012 [Cancelled].
475. [Inauguration Speech for the new MPI Director Claudia Felser] "Spintronic Materials and Nano-devices", Scientific Colloquium on "Solid State Chemistry at MPI CPfS", Dresden, Germany, May 4, 2012.
476. "Turning Insulators into Metals!", Intermag 2012 Conference, Vancouver, BC, Canada, May 7-12, 2012.
477. "Current induced domain wall motion in perpendicularly magnetized nanowires", International Symposium on the Dynamics of Domain Walls, Hamburg, Germany, May 30- June 1, 2012.
478. "Domain Wall Depinning Using Thermally Generated Spin Currents", International Workshop: "Spin Caloritronics IV", Sendai, Japan, June 2-5, 2012.
479. "Interface current driven domain wall motion in perpendicularly magnetized Co/Ni nanowires", Workshop on "Nanoscale Transport", 2nd ICQD-ICQS-ICQM Joint Annual Workshop, Suzhou, China, June 15-16, 2012.
480. "Electrolyte Gate Induced Metallization of several facets (100, 001, 110 and 100) of rutile TiO<sub>2</sub> and (001) SrTiO<sub>3</sub>", Nature Conference on Frontiers in Electronic Materials: Correlation Effects and Memristive Phenomena, Aachen, Germany, June 17-20, 2012.
481. "Turning Insulators into Metals!", "Workshop on Novel Materials: Celebrating the 65<sup>th</sup> birthday of Warren Pickett", Davis, California, June 23-25<sup>th</sup>, 2012.

482. [Plenary] Inaugural IUMRS-ICYRAM 2012 - International Conference of Young Researchers on Advanced Materials, organized by the International Union of Materials Research Societies, Singapore, July 1-6<sup>th</sup>, 2012.
483. [Half-Plenary] “The Spin on Domain Walls!”, 19th International Conference on Magnetism (ICM-2012), Busan, Korea, July 8-13<sup>th</sup>, 2012.
484. “Origin of current driven domain wall motion in perpendicularly magnetized Co/Ni nanowires”, “Spin Dynamics in Nanomagnets”, Satellite Workshop of ICM 2012, Seoul, Korea, July 15-18, 2012.
485. “Racetrack Memory 2.0! ”, 2012 CMOS Emerging Technologies Conference, Vancouver, British Columbia, Canada, July 18-20, 2012 [Cancelled].
486. [Plenary] “Interface current driven domain wall motion in perpendicularly magnetized Co/Ni nanowires”, 4th WUN International Conference on Spintronics (WUN-SPIN 2012), Sydney, Australia, July 23-25, 2012.
487. “The Spin on Domain Walls!”, 7<sup>th</sup> Multifunctional Materials Workshop, Gamboa, Panama, August 5-9, 2012 [Cancelled].
488. “The Spin on Domain Walls!”, Symposium on “Interfaces, Structure, and Domain Engineering in Ferroic Systems”, International Materials Research Congress (IMRC) XIX, Cancun, Mexico (<http://www.mrs-mexico.org.mx/imrc2012/>), August 13-17, 2012 [Cancelled].
489. “Magnetoresistive RAM: a truly non-volatile RAM”, MRAM panel, Flash Memory Summit, Santa Clara, California, August 21-23, 2012.
490. [Keynote] “The Spin on Electronics!”, Conference on “Theory and Applications in Computational Chemistry (TACC-2012)”, University of Pavia, Italy, September 2-7<sup>th</sup>, 2012.
491. “The Spin on Domain Walls!”, The JEMS appetizer: a small meeting about future trends of magnetism, Istituto Nazionale di Ricerca Metrologica (INRIM) Torino, Italy, September 7, 2012.
492. Istituzione Nazionale di Ricerca Metrologica (INRIM) Torino, Italy, September 7, 2012.
493. [Plenary] “Racetrack Memory: The Spin on Domain Walls!”, 6th edition of the Joint European Magnetic Symposia – JEMS 2012, Parma Italy, September 9-14<sup>th</sup>, 2012.
494. “The Spin on Electronics!”, IBM Regional Technical Leadership Exchange (RTLE), India, September 11-12<sup>th</sup>, 2012 [cancelled].
495. “Current induced motion of domain walls in perpendicularly magnetized racetracks”, International Colloquium of Magnetic Films and Surfaces (ICMFS), Shanghai, China, September 24 – 28, 2012.
496. “Racetrack Memory 2.0: a high performance, current controlled, domain-wall shift-register storage-class memory”, 2012 International Conference on Solid State Devices and Materials (SSDM 2012), Kyoto, Japan, September 25-27, 2012 and invited participant rump session (September 26, 2012).
497. “Energy Efficiency for Data Storage”, Winton Inaugural Symposium on “Energy Efficiency – Fundamental Physical Limits”, Cambridge, United Kingdom, October 1, 2012.
498. [Keynote] “The Spin on Electronics!”, 9<sup>th</sup> International Symposium on Advanced Gate Stack Technology organized by Sematech, Saratoga Springs, New York State, October 3-4<sup>th</sup>, 2012.
499. “Racetrack Memory 2.0!”, ECS Prime, Pacific Rim Meeting on Electrochemical and Solid-State Science, Honolulu, Hawaii, October 7-12, 2012.
500. [Plenary] “The Spin on Electronics! - Science and Technology of spin currents in nano-materials and nano-devices”, NANOTECH ITALY Conference (<http://www.nanotechitaly.it>), Venice, Italy, November 21-23, 2012.
501. [Von Hippel Award Lecture] “The Spin on Electronics! - Science and Technology of spin currents in nano-materials and nano-devices”, Materials Research Society Fall Meeting, Boston, Massachusetts, November 25-30, 2012.
502. “The Emergence of Spintronics: Publish and Perish! ”, AIP Celebration of Applied Physics Letters' 50th Anniversary, Boston, Massachusetts, November 27, 2012.
503. “Electrolyte gate induced metallic phases in various oxides”, 4th Annual India-Cambridge Winter School on the Chemistry and Physics of Materials, JNCASR, Bangalore, India, December 3-8, 2012.
504. [Plenary] “Spin on Nano!”, DGIST Global Innovation Festival, organized by Daegu-Gyeongbuk Institute of Science and Technology (DGIST), Daegu, Korea, December 6-7, 2012.
505. Workshop on "Novel Materials: Adding Material-Specific Reality in Physicist's Models", "International Institute of Physics (IIP)", Federal University of Rio Grande do Norte, Natal, Brazil, December 3-14<sup>th</sup>, 2012.
506. Materials Genome Initiative (MGI) Workshop on the Interplay of Experiment, Theory, and Computation, Arlington, Virginia, December 13-15<sup>th</sup>, 2012.
507. International Conference on Quantum Information and Quantum Computing (ICQIQ), Bangalore, India, January 7-11<sup>th</sup>, 2013. [Cancelled].
508. “Direction of motion and high speed of domain walls in nanowires with perpendicular magnetic anisotropy”, 12th Joint MMM/Intermag Conference (MMM/Intermag 2013), Chicago, Illinois, January 14-18<sup>th</sup>, 2013.



509. QS2C Theory Forum: International Symposium on "Strongly Correlated Quantum Science", Tokyo, Japan, January 26-29<sup>th</sup>, 2013.
510. [Keynote] "The Spin on Electronics! - Science and Technology of spin currents in nano-materials and nano-devices", 2nd Public Symposium "Challenge for Paradigm-shift of the Semiconductor Technology", organized by JST-CREST "Research of Innovative Material and Process for Creation of Next-generation Electronics Devices", Fujisoft Akiba Plaza, Tokyo, Japan, February 8<sup>th</sup>, 2013.
511. Workshop on "Spin-orbit induced torques", KAUST, Thuwal, Kingdom of Saudia Arabia, February 23-28<sup>th</sup>, 2013.
512. [Krishnan Memorial Lecture] "The Spin on Nano!", XXXIV Krishnan Memorial Lecture (in honor of Sir K.S. Krishnan), National Physical Laboratory, New Delhi, India, March 11<sup>th</sup>, 2013.
513. "Current driven domain wall dynamics controlled by proximity induced interface magnetization", Spring Meeting of the Germany Physical Society, Regensburg, Germany, March 10-15<sup>th</sup>, 2013.
514. "Spintronic Memories", University of Sao Paulo Short Course, March 21<sup>st</sup>, 2013.
515. "Introduction to Spintronics and Racetrack", New Spin 3 Workshop and Summer School, Mainz, Germany, April 2-5 and 5-9<sup>th</sup>, 2013.
516. [Plenary] Symposium on "Frontiers in Quantum Matter", Institute for Complex Adaptive Matter (ICAM) Annual Conference, Rio de Janeiro, Brasil, April 17-22<sup>nd</sup>, 2013 (plenary session on April 20<sup>th</sup>).
517. Colloquium in honor of Gernot Guntherodt's 70<sup>th</sup> birthday, Aachen, Germany, May 3<sup>rd</sup>, 2013.
518. [Plenary] 16th Brazilian Workshop on Semiconductor Physics (BSWP), Itirapina, Brazil, May 5-10<sup>th</sup>, 2013.
519. "Spin Caloritronics V", Columbus, Ohio, May 12-15<sup>th</sup>, 2013.
520. [Award ceremony] "The Spin on Electronics! Science and Technology of Spin Currents in Nano Materials and Nano Devices", Festkolloquium: anlässlich der Verleihung der Ehrendoktorwürde an Prof. Dr. h. c. Stuart S. P. Parkin (Honorary Doctorate Ceremony), University of Kaiserslautern, Germany, June 3<sup>rd</sup>, 2013.
521. International Symposium Spin Waves 2013, St. Petersburg, Russia, June 9-15<sup>th</sup>, 2013 [cancelled].
522. Inauguration Symposium for the Hamburg Centre for Free Electron Laser Science, Hamburg, Germany, June 17<sup>th</sup>, 2013.
523. "Racetrack Memory: a dynamically reconfigurable, low power memory-storage device", Kick-off Meeting, Department of Defense Advanced Computing Initiative, Catonsville, MD (UMBC Research Park), June 24<sup>th</sup>, 2013.
524. [Plenary] Workshop on Materials Genome Initiative "Grand Challenges", Washington, DC, June 25-26<sup>th</sup>, 2013.
525. [Keynote] "Spintronics!", Dresdner Lange Nacht der Wissenschaften, Dresden, Germany, July 5, 2013.
526. French-US Workshop on Spintronics, University of California San Diego, July 8-12<sup>th</sup>, 2013.
527. [Plenary] ISAMMA 2013 Taichung, Taiwan, July 21-25<sup>th</sup>, 2013.
528. [Plenary] "Overview of Science and Technology of Spintronics", 25th ISIF International Symposium on Integrated Functionalities (formerly International Symposium on Integrated Ferroelectrics), Dallas, Texas, July 28-31, 2013.
529. "Future Memory Technologies", Innovative Technology, Flash Memory Summit, San Jose, California, August 13<sup>th</sup>, 2013.
530. 2013 Gordon Research Conference on Spin Dynamics in Nanostructures, Hong Kong, China, August 18<sup>th</sup> - 23<sup>th</sup>, 2013.
531. [Keynote] Spintronics VI, SPIE Optics+Photonics 2013, San Diego, California, August 25-29, 2013.
532. [Keynote after conference dinner speaker] JEMS, Rhodes, Greece, August 25-29, 2013. [August 28<sup>th</sup>]
533. [Plenary] International Conference on Nanoscale Magnetism (ICNM-2013), Istanbul, Turkey, September 2-6<sup>th</sup>, 2013. [my talk September 6<sup>th</sup>]
534. [Plenary – opening talk] Meeting of the Italian, Spanish and Swiss Crystallographic Associations, MISSCA 2013, Villa Olmo, Como, Italy, September 9-12<sup>th</sup>, 2013.
535. [Plenary – opening talk] Italian National Conference on Condensed Matter Physics (<http://www.fisi.polimi.it/it/fismat2013>), Milan, Italy, September 9-13<sup>th</sup>, 2013.
536. [Plenary] Donosita International Conference on Nanoscale Magnetism and Applications (DICNMA), San Sebastián, Spain, September 9-13<sup>th</sup>, 2013.
537. [Plenary] Fifth Euro-Asian Symposium "Trends in MAGnetism": Nanomagnetism (EASTMAG-2013), Russky Island, Vladivostok, Russia, September 15-21<sup>st</sup>, 2013. [Cancelled]
538. Workshop on Oxide Electronics (WOE 20), Singapore, September 22<sup>nd</sup> - 25<sup>th</sup>, 2013. [Cancelled]
539. [Keynote] Symposium on Spintronics and Magnetic Nanomaterials, IUMRS-ICAM2013, Qingdao, China, September 22-28<sup>th</sup>, 2013.

540. [Plenary] “Racetrack Memory”, Joint IMPRS/SFB Workshop on Nanoscience and -technology, Halle (Saale), Germany, September 30th - October 2nd, 2013.
541. [Keynote] “The Spin on Electronics!”, Strategic Materials Conference (SMC - SEMI 2013), Santa Clara, California, USA, October 16-17, 2013.
542. "The Spin on Domain Walls!", Joint NSFC-JSPS Seminar on magnetic surface and films with novel characterization techniques, Shanghai, China, October 21 -25<sup>th</sup>, 2013.
543. [Plenary] “The Spin on Electronics!”, 15th SPVM National Physics Conference; the 2013 International Conference in Applied Physics and Materials Science and the International Complex Systems Meeting 2013, Ateneo de Davao University, Davao City, Philippines, October 24-26<sup>th</sup>, 2013.
544. [Public Lecture] “The Spin on Electronics! - Science and Technology of spin currents in nano-materials and nano-devices”, KIPT, Santa Barbara, California, November 4<sup>th</sup>, 2013.
545. “Chiral Spin Torque”, Experimentalist of the week, KITP Program on Spintronics, November 4-8<sup>th</sup>, 2013.
546. FIRST-QS2C Workshop on "Emergent Phenomena of Correlated Materials", Tokyo, Japan, November 13-16<sup>th</sup>, 2013.
547. “Turning Insulators into Metals!”, Korean Academy of Science and Technology (KAST) Frontier Research Scientists (FRS) Workshop, New York City, NY, November 18-19, 2013.
548. [Plenary] Second International Conference on Magnetic Materials and Applications 2013 (MagMA-2013), Guwahati, India, December 5-7<sup>th</sup>, 2013.
549. Nano Saclay Nanoelectronics Workshop, Paris, France, December 10-13<sup>th</sup>, 2013. [My talk December 10]
550. [Plenary] 17th International Workshop on the Physics of Semiconductor Devices, Amity University, Uttar Pradesh, India, December 10-13<sup>th</sup>, 2013.
551. [Video Lecture] Interdisciplinary Academic Fest, Presidency University, Kolkata, India, December 13-15<sup>th</sup>, 2013.
552. “Chiral Spin Torque at Magnetic Domain Walls”, Eindhoven, The Netherlands, December 18<sup>th</sup>, 2013.
553. “Chiral Spin Torque at Magnetic Domain Walls”, Workshop on "Current-Driven Magnetisation Dynamics", Leeds, United Kingdom, January 7-9<sup>th</sup>, 2014.
554. “Chiral Spin Torque at Magnetic Domain Walls”, Magnetism Workshop, Bad Honnef, Germany, January 8-10<sup>th</sup>, 2014.
555. “Electric field induced metallization of oxides”, 41st Conference on the Physics and Chemistry of Surfaces and Interfaces (PCSI-41), Santa Fe, New Mexico, January 12-16<sup>th</sup>, 2014.
556. “Chiral Spin Torque at Magnetic Domain Walls”, International Symposium on “Topological quantum technology”, Tokyo, Japan, January 27-30<sup>th</sup>, 2014.
557. “Spin on Electronics!”, Winter School, Russell Berie Nanotechnology Institute, Technion-Israel Institute of Technology, Haifa, Israel, February 9-13<sup>th</sup>, 2014.
558. “Racetrack Memory –Chiral Spin Torque at Magnetic Domain Walls → Makes possible high density storage-class memory”, Reimei International Workshop on "Spin Current and Related Phenomena", Grenoble, France, February 10-13<sup>th</sup>, 2014.
559. “The Spin on Electronics!”, 2014 NCCAUS Joint User Group Meeting on Nanomaterials for Energy, Biomedical, and Electronic Devices, San Jose, California, February 20<sup>th</sup>, 2014.
560. 6<sup>th</sup> Workshop on Advanced Materials, (IWAM-2014), Ras al Khaimah (RAK), United Arab Emirates (UAE), February 22- 25<sup>th</sup>, 2014. [cancelled]
561. "Giant reversible structural and electronic changes in liquid gated epitaxial films of VO<sub>2</sub>", 2014 March Meeting of the American Physical Society, Denver, Colorado, March 3-7<sup>th</sup>, 2014.
562. [Plenary] “Turning Insulators into Metals!”, SFB 762 Workshop, Irsee, Germany, March 10-14, 2014.
563. Symposium on “Spintronics for Integrated Circuits and Beyond (tentative)”, Tokyo, Japan, March 13-14<sup>th</sup>, 2014. [International speakers March 13: Hideo Ohno Program Final Meeting][Cancelled].
564. [Plenary] Spring Meeting of the Condensed Matter Division of the German Physical Society (DPG), Dresden, Germany, March 31<sup>st</sup> - April 3<sup>rd</sup>, 2014.
565. Workshop on Correlated Oxides and Oxide Interfaces, William I. Fine Theoretical Physics Institute, University of Minnesota, Minneapolis, Minnesota, May 1-4<sup>th</sup>, 2014.[Cancelled]
566. “Workshop on Complex oxides – Santorini 3 in Cyprus”, Cyprus, May 19-23<sup>rd</sup>, 2014. [Cancelled]
567. Magnetic North IV (www.magnetic-north.ca) Workshop on "Controlling magnetism and its excitations", Victoria, British Columbia, Canada, May 23<sup>rd</sup>-25<sup>th</sup>, 2014. [Cancelled]
568. Symposium on “Advanced Materials: Current Trends and Future Prospects”, Manali, the Himalayas, India, May 28<sup>th</sup>- June 1<sup>st</sup>, 2014.
569. “Spin transport in race track memory: a domain wall motion memory”, Session FL-3 - Role of mass and charge transport in application engineering, 4th International Conference "Mass, Charge and Spin Transport

- in Inorganic Materials: Fundamentals to Devices", 6th Forum on New Materials, CIMTEC 2014, Montecatini Terme, Tuscany, Italy, June 15-20th, 2014. [Cancelled].
570. "Atomically Engineered Spintronic & Cognitive Materials", International Max Planck Research School (IMPRS) Summer School on "Superconductivity and Magnetism at the Nanoscale", Stuttgart, Germany, June 30<sup>th</sup> - July 3<sup>rd</sup>, 2014.
  571. "Giant reversible structural and electronic changes in liquid gated epitaxial oxide films", CECAM-Lorentz workshop: "Towards higher-temperature superconductivity", Leiden, The Netherlands, June 30th-July 4th, 2014.
  572. "Chiral Spin Torque", International Symposium on Spin-Polarized Electron Physics and Nanomagnetism, Halle (Saale), Germany, July 10-13th, 2014.
  573. "Racetrack Memory", Spincaloritronics VI conference and summer school 2014, Irsee, Germany, July 14-18<sup>th</sup>, 2014.
  574. TTI/Vanguard "Next" Conference, London, United Kingdom, July 22-23<sup>rd</sup>, 2014. [Cancelled]
  575. [Keynote] Spintronics VII Symposium, SPIE Optics & Photonics Conference, San Diego, California, August 17 – 21<sup>st</sup>, 2014.
  576. [Plenary] "The Spin on Electronics!", Trans-Nano-Forum, Nancy, France, September 10<sup>th</sup>, 2014
  577. M-SNOWS'14, Nancy, France, September 8-11th, 2014.
  578. "Chiral Spin Torque and Exchange Coupling Torque at Magnetic Domain Walls", E-MRS Fall Meeting, Symposium X "Antiferromagnetic spintronics: materials, characterization, functionalities", Warsaw, Poland, September 16-18<sup>th</sup>, 2014.
  579. [Plenary] "The Spin on Electronics!", 40th Micro- and Nano Engineering Conference, MNE 2014, Lausanne, Switzerland, September 22-26<sup>th</sup>, 2014.
  580. [Public Lecture] "Atomically engineered spintronic and cognitive materials", Masterclass in Nanoscale Physics and Devices, Tata Institute of Fundamental Research, Mumbai, India, October 7<sup>th</sup>, 2014.
  581. [Keynote] Fluid Nanoelectronics for Cognitive Devices and Systems, SRC/NSF/IIT Forum on Nanoelectronic Manufacturing: From Materials to Systems, Mumbai, India, October 8-10<sup>th</sup>, 2014.
  582. "Highly Efficient Current Induced Domain Wall Motion in Synthetic Antiferromagnetic Racetracks", First Annual Symposium on Advanced Spintronic Materials, Materials Science & Technology (MS&T), Pittsburgh, Pennsylvania, October 12-16<sup>th</sup>, 2014.
  583. "Highly Efficient Current Induced Domain Wall Motion in Synthetic Antiferromagnetic Racetracks", Workshop on spin-orbit coupling physics, Fudan, China, October 20-22<sup>nd</sup>, 2014.
  584. [Opening Speech] "Novel materials for Memory-Storage devices", 4th STT-MRAM Global Innovation Forum, Seoul, Korea, October 22<sup>nd</sup>, 2014.
  585. [Plenary Keynote] "The Spin on Electronics!", NanoCity Nanoscience and Nanotechnology Conference, Maarssen, The Netherlands, October 27-28<sup>th</sup>, 2014.
  586. "Giant Exchange-Coupling Torque Driven Domain-Wall Velocities in Synthetic Antiferromagnets", Symposium on Recent Progress in Current-Induced Torques, 59th Annual Magnetism and Magnetic Materials (MMM) Conference, Honolulu, Hawaii, November 3-7<sup>th</sup>, 2014.
  587. "The spin on electronics!", Kuratorium, Max Planck Institute for the Chemical Physics of Solids, Dresden, Germany, November 6<sup>th</sup>, 2014.
  588. "From Research to IT Innovations", 2 Future developments and impacts of ICT, World Cultural Council Award Ceremonies and Aalto University Academic Summit on the Impact of Universities on Economic Growth, Helsinki, Finland, November 19<sup>th</sup>, 2014.
  589. [Silver Jubilee Lecture in Materials] "Spintronics and Ionitronic Computing Technologies", 2Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Bangalore, India, December 2<sup>nd</sup>, 2014.
  590. [CNR Rao Endowment Lecture] "Racetrack Memory: Highly Efficient Current Induced Domain Wall Motion in Synthetic Antiferromagnetic Racetracks", India Institute of Science (IISc), Bangalore, India, December 4<sup>th</sup>, 2014.22
  591. [Public Lecture] "Spintronics and Ionitronic Computing Technologies", 2nd International Conference on Emerging Electronics (ICEE), IIT Bombay, India, December 4-6<sup>th</sup>, 2014.
  592. [Keynote Lecture] "Spintronics and Ionitronic Computing Technologies", 7<sup>th</sup> Bangalore India Nano, Bangalore, India, December 4-6, 2014.
  593. Wilhelm-und-Else-Heraeus Meeting on "Oxide Spintronics: Novel materials, transport and emerging phenomena", Physikzentrum Bad Honnef, Germany, January 7-9<sup>th</sup>, 2015.
  594. [Plenary] "The Spin on Electronics!", Global Young Scientists Summit, Singapore, January 18-23<sup>rd</sup>, 2015.
  595. "Cognitive Materials and Devices", Global Young Scientists Summit, Singapore, January 18-23<sup>rd</sup>, 2015.
  596. "The Spin on Storage!", Global Young Scientists Summit, Singapore, January 18-23<sup>rd</sup>, 2015.

597. BESSY-VSR workshop 'From Pico to Femto', January 26-27<sup>th</sup>, 2015 [Cancelled].
598. "Spintronic and Ionitronic Materials and Devices", Symposium on "Beyond Silicon: New Materials for Future Computers", AAAS Annual Meeting, San Jose, California, February 13-16<sup>th</sup>, 2015.
599. [Plenary lecture] "Spintronic and Ionitronic Computing Technologies", DECHEMA conference, "Angewandte Anorganische Chemie" (Applied Inorganic Chemistry), Frankfurt, Germany, February 19-20<sup>th</sup>, 2015.
600. "Cognitive devices: Ionitronics", Workshop on Advanced Materials (IWAM-2015), Ras al Khaimah (RAK), UAE, February 21-24<sup>th</sup>, 2015.
601. [Concluding Conference Plenary Talk] "Racetrack Memory: Highly Efficient Current Induced Domain Wall Motion in Synthetic Antiferromagnetic Racetracks", KAUST 2nd international workshop on Spin-Orbit Torques, Thuwal, Kingdom of Saudi Arabia, February 26<sup>th</sup>- March 1<sup>st</sup>, 2015.
602. [2015 Sir Gareth Roberts Lecture] "Spintronic and Ionitronic Computing Technologies", Durham University, United Kingdom, March 11<sup>th</sup>, 2015.
603. "Racetrack Memory: Highly Efficient Current Induced Domain Wall Motion in Synthetic Antiferromagnetic Racetracks" in Focus Session on "Skyrmionics: Future of Spintronics?", DPG Spring Meeting 2015, Berlin, Germany, March 15-20, 2015 (March 16<sup>th</sup>).
604. "Cognitive devices: Ionitronics" in Symposium on "Neurophysics: Physical Approaches to Deciphering Neuronal Information Processing", DPG Spring Meeting 2015, Berlin, Germany, March 15-20, 2015 (March 17<sup>th</sup>).
605. [Plenary] "Racetrack Memory: Highly Efficient Current Induced Domain Wall Motion in Synthetic Antiferromagnetic Racetracks", Magnetism 2015, Leeds, United Kingdom, March 30-31<sup>st</sup>, 2015.
606. Symposium on "Metal oxides: from advanced fabrication and interfaces to energy and sensing applications" 2015 MRS Spring Meeting, San Francisco, California, April 6-10<sup>th</sup>, 2015. [Cancelled].
607. Nanoelectronics Day 2015, Aachen, April 27<sup>th</sup> to 29<sup>th</sup>, 2015. [Cancelled]
608. "Recent progress in domain wall motion in artificially engineered racetracks driven by spin-orbit torques", Symposium on "Emerging Device Concepts for Magnetic Memory", IEEE International Magnetics Conference, INTERMAG 2015, Beijing, China, May 11-15<sup>th</sup>, 2015.
609. "Electrolyte gate induced metallization in epitaxial oxide films", International Conference on Electroceramics (ICE 2015), Penn Stater Conference Center, State College, Pennsylvania, May 13-16<sup>th</sup>, 2015.
610. Workshop on Topological Magnets, Suzuki Umetaro Hall, RIKEN, Wako, Saitama, Japan, May 25-27<sup>th</sup>, 2015.
611. [Keynote] "Spintronic and Ionitronic Computing Technologies: enhancing the quality of people's lives!", EuroNanoForum 2015, Riga, Latvia, June 10-12, 2015.
612. [11th C.K Majumdar Memorial Lecture], "Spintronic and Ionitronic Computing Technologies", S.N Bose National Centre for Basic Sciences, Kolkata, India, June 12, 2015.
613. "Cognitive Devices – Ionitronics", International Conference on Frontiers in Advanced Materials, Indian Institute of Science, Bangalore, India, June 15-18<sup>th</sup>, 2015.
614. International Conference on "Recent Trends in Nanomagnetism, Spintronics and their Applications" (RTNSA-2015), Ordizia, San Sebastian, Spain, June 30 - July 3<sup>rd</sup>, 2015. [Cancelled].
615. "Racetrack Memory - Highly Efficient Current Induced Domain Wall Motion in Synthetic Antiferromagnetic Racetracks", International Conference on Magnetism, Barcelona, Spain, July 5-10, 2015.
616. "Electrolyte gate induced metallization of oxides- *ionitronics*", Concepts and Discovery in Quantum Matter: A celebration in honour of Gil Lonzarich's seventieth, Cambridge, United Kingdom, July 12-15, 2015.
617. "Highly Efficient Current Induced Domain Wall Motion in Synthetic Antiferromagnetic Racetracks", Beilstein Nanotechnology Symposium, Postdam, Germany, September 6-9, 2015.
618. [Keynote] "Cognitive Devices – Ionitronics", Symposium addressing future research directions in the field of Physical Chemistry and Chemical Physics, Berlin, Germany, September 28-30<sup>th</sup>, 2015.
619. [Opening –Keynote] "Opportunities in spintronic and cognitive materials: challenges for structural characterization", Workshop on Electron Microscopy of Magnetic Structures, October 1, Halle, Germany.
620. [Chair - Panel] Chair, Roundtable on "Future trends", Workshop on Electron Microscopy of Magnetic Structures, October 1, Halle, Germany.
621. "Beyond CMOS!: Introduction to Workshop", MPI-Halle Workshop on Materials and Devices Beyond CMOS, Ringberg Castle, Germany, October 7-9, 2015.
622. [Plenary] "Spintronic and Ionitronic Computing Technologies: enhancing the quality of people's lives!", Tiedon valossa, Tampere University of Technology Forum to celebrate its Jubilee, Tampere, Finland, October 22, 2015.

623. [Panelist] “Big Data”, Millennium Technology Prize Discussion panel, Tampere University of Technology, Tampere, Finland, October 22, 2015.
624. “Cognitive Computing: new materials & devices, innately 3D”, Neuromorphic Computing, Materials and Devices Roundtable, Washington, DC, October 29-30, 2015.
625. [Panelist] Scalability of STT-MRAM, 6<sup>th</sup> MRAM Global Innovation Forum, San Jose, California, November 11<sup>th</sup>, 2015.
626. Symposium on "Physics of Macromolecules", Campus Adlershof, Humboldt-Universität zu Berlin (in honor of Prof. Jürgen P. Rabe's 60th birthday, November 20<sup>th</sup>, 2015).
627. “Facet-dependent Giant Spin Orbit Torque in Single Crystalline Antiferromagnetic Ir-Mn”, International Workshop: Spintronics with Antiferromagnets, Sendai, Japan, November 16-17, 2015.
628. [Opening Plenary Talk] “Rise of Racetrack Memory: Domain wall spin orbitronics”, Tohoku Forum for Creativity: International Workshop: Spintronics and 13<sup>th</sup> RIEC International Workshop on Spintronics, Sendai, Japan, November 18-20<sup>th</sup>, 2015.
629. “Electrolyte gate induced metallization of oxides – ionitronics”, Symposium DDD: Extreme Environments - A Route to Novel Materials”, Materials Research Society Fall Meeting, Boston, Massachusetts, November 29- December 3, 2015.
630. [Opening Talk] “Rise of Racetrack Memory!”, Cambridge – JNCASR Winter School on “Frontiers in Materials Science”, JNCASR, Bangalore, India, December 7-11, 2015.
631. “Termination layer compensated tunneling magnetoresistance in ferrimagnetic Heusler compounds with high perpendicular magnetic anisotropy”, MMM/ Intermag Joint Conference, San Diego, California, January 11-15, 2016.
632. [Plenary] “Spintronic and Ionitronic Computing Technologies”, Global Young Scientists Summit@one-north 2016, Singapore, January 17-22, 2016.
633. [Plenary] “Making Innovation Work through Nanotechnology and New Materials: Spintronic and Ionitronic Computing Technologies”, Singapore Management University, Singapore, January 20, 2016.
634. [Plenary] “Innovations for a Better Future: Spintronic and Cognitive Technologies”, A\*Star, Singapore, January 21, 2016.
635. [Public Lecture] “Innovative applications of Technology: Spintronic and Cognitive Technologies”, SUTD (Singapore University of Technology and Design), Singapore, January 21, 2016.
636. [Plenary] “Spintronic and Cognitive Technologies”, Basic Research Needs workshop on Quantum Materials for Energy Relevant Technology, Gaithersburg, Maryland, February 8-10, 2016.
637. [Public Lecture] “Spintronic and Cognitive Technologies”, Balázs Györfy Colloquium, Bristol, United Kingdom, February 15<sup>th</sup>, 2016.
638. “Rise of Racetrack Memory!: Domain Wall Spin-orbitronics”, Royal Society Theo Murphy meeting ‘Domain walls as new 2D functional materials’, The Royal Society at Chicheley Hall, Buckinghamshire, United Kingdom, February 22-23, 2016.
639. “Facet dependent spin orbit torques in antiferromagnet Mn<sub>3</sub>Ir”, Workshop on “Topology meets materials”, Weizmann Institute, Israel, February 28-29, 2016.
640. Julich Spring School on Memristive Materials, Julich, Germany, March 1-2, 2016. [Cancelled]
641. “Rise of Racetrack Memory! Domain Wall Spin-Orbitronics”, Symposium on “Beyond STT-RAM: Future Directions for Spintronic Devices”, APS March Meeting, Baltimore, Maryland, USA, March 14-18, 2016.
642. “Spintronics, a new path for cfaed: Spin-Orbit Torque Devices for memory and wireless communication applications”, cfaed Spring Research Festival, Dresden, Germany, March 22-23, 2016.
643. “Cognitive and Spintronic Technologies”, Symposium on “Zukunftsaussicht Technik – Vom Spin bis zum Sonnensystem”, Leopoldina, Halle, Germany, March 24<sup>th</sup>, 2016.
644. “Cognitive Devices – Ionitronics”, Symposium MD3 "Functional oxide heterostructures by design", 2016 MRS Spring Meeting, Phoenix, Arizona, March 28 - April 1, 2016.
645. [Plenary] Opening of Sydney Nanoscience Hub, Sydney, Australia, April 19-21, 2016.
646. [Plenary] 5<sup>th</sup> “International Conference on Superconductivity and Magnetism”- ICSM2016, Fethiye, Turkey, April 24-30<sup>th</sup>, 2016.
647. “SORBET: spin orbitronics”, Insulatronics 2016, Longyearbyen, Svalbard, May 27-31, 2016.
648. [Plenary] Nanotech France 2016 /European Graphene Forum 2016, Paris, France, June 1-3, 2016.
649. [Plenary] World Material Forum, Nancy, France, June 9-10, 2016.
650. 76<sup>th</sup> Annual Physical Electronics Conference (PEC) meeting, Fayetteville, Arkansas, June 20-23, 2016 [Cancelled].
651. Tohoku-York-Kaiserslautern Core-to-Core Workshop “New Concept Spintronic Devices 2016”, Kaiserslautern, Germany, June 22-24, 2016.

652. "Nanomagnetism and spintronics" (SKYMAG 2016), San Sebastian, Gipuzkoa, Spain, June 26 – June 30, 2016.
653. [Keynote] Joint European Magnetism Symposia (JEMS) 2016, Glasgow, Scotland, August 22-26, 2016.
654. [Keynote] TNT2016, Fribourg, Switzerland, September 5-9, 2016.
655. Second International Workshop "From Electronic Correlations to Functionality", Kloster Irsee, September 12 - 15, 2016.
656. [Plenary] MESA+ Institute of Nanotechnology, University of Twente, Twente, The Netherlands, September 26<sup>th</sup>, 2016.
657. "Spintronics: a 25-year journey!", 20th Anniversary Spin-Torque MRAM Symposium, IBM T. J. Watson Research Center, Yorktown Heights, New York, November 7, 2016.
658. "Beyond charge currents: spin and ion currents for future computing technologies", Max Planck-Argentina-Symposium on "Frontiers in Physical Sciences", Buenos Aires, Argentina, November 16th – 18th, 2016.
659. [Annual Distinguished Lecture] "Beyond charge currents: spin and ion currents for future computing technologies", Helmholtz Center, Berlin, Germany, November 21<sup>st</sup>, 2016.
660. MRS Fall 2016 Symposium EM3 on "Electronic and Ionic Dynamics at Solid-Liquid Interfaces", Boston, Massachusetts, November 27- December 2, 2016.
661. [Keynote] "Beyond charge currents: spin and ion currents for future computing technologies", 7th NRW Nano-Conference, Münster, Germany, December 7-8, 2016.
662. Symposium on "Bits and Brains: New materials and brain-inspired concepts for low energy information processing", Veldhoven Meeting, The Netherlands, January 17-18th, 2017. [Cancelled]
663. "Beyond charge currents: spin and ion currents for future computing Technologies", Global Young Scientists Summit (GYSS-2017), Singapore, January 15-20, 2017.
664. "Spin orbitronics for advanced magnetic memories", Conference on 90 years of quantum mechanics (QM90), Institute of Advanced Studies ((IAS), Nanyang Technological University (NTU), Singapore, January 23-26, 2017.
665. "Beyond charge currents: spin and ion currents for future computing Technologies", Dagstuhl Seminar on "Wildly Heterogeneous Post-CMOS Technologies Meet Software" (17061), Schloss Dagstuhl, Saarbrücken, Germany, February 5-10, 2017.
666. Workshop on "Topological Phases and Functionality of Correlated Electron Systems", Institute for Solid State Physics, University of Tokyo, Tokyo, February 20-22, 2017. [Cancelled].
667. "Advanced materials for future computing technologies using spins and ions", Ninth Annual International Workshop on Advanced Materials (IWAM 2017), Ras Al Khaimah, United Arab Emirates, February 19 – 21, 2017.
668. [Named Lecture] Carr Lecture, "Beyond charge currents: spin and ion currents for future computing Technologies", University of Maryland, February 28, 2017.
669. "Non-collinear spin textures: chiral domain walls and anti-skyrmions", Weizmann-Max Planck Workshop on "Topology meets materials", Dresden, Germany, June 4-5, 2017.
670. [Keynote] "Chiral spin orbitronics", 2017 Stephen and Sharon Seiden Frontiers in Engineering and Science Workshop on "Beyond CMOS: From Devices to Systems", The Technion- Israel Institute of Technology, Haifa, Israel, June 5-6, 2017.
671. [Plenary] "Spin orbitronics for advanced magnetic memories", Physics of Magnetism 2017, Poznan, Poland, June 26-30, 2017.
672. [Keynote] "Chiral spin orbitronics for advanced magnetic memories: chiral domain walls and anti-skyrmions", Frontiers in Emergent Quantum Phenomena symposium, New York City, June 28-30, 2017.
673. [Plenary] "Spin orbitronics for advanced magnetic memories", Moscow International Symposium on Magnetism – 2017 (MISM-2017), M.V. Lomonosov Moscow State University, Moscow, Russia, July 1– July 5, 2017.
674. "Spin orbitronics for advanced magnetic memories: chiral domain walls and antiskyrmions", SPICE Workshop "Topology Matters", Mainz, Germany, July 25-28, 2017.
675. [Keynote] "Ionic Liquid gate induced metallization", New Directions in Solid State Chemistry, Edinburgh, United Kingdom, July 27-28, 2017.
676. [Plenary] "Chiral spin orbitronics", International Baltic Conference on Magnetism 2017 (IBCM), Svetlogorsk, Kaliningrad region, Russia, August 20-24, 2017.
677. [Plenary] "Chiral spin orbitronics for advanced magnetic memories: chiral domain walls and anti-skyrmions", Psi-k/CECAM Research Conference on "Ab-initio Spin-orbitronics", Montesilvano, Pescara, Italy, September 25-29, 2017.

678. SPICE workshop on “Exotic New States in Superconducting Devices: the Age of the Interface”, Schloss Waldthausen, Mainz, Germany, September 25-28, 2017. [Cancelled]
679. “Chiral spin orbitronics for advanced magnetic memories: chiral domain walls and anti-skyrmions”, “Spin, charge and energy transport in novel materials”, Hvar, Croatia, October 1-7, 2017.
680. “Chiral spin orbitronics”, Nature Conference “Ferroic materials: challenges and opportunities”, Xi’an, China, October 25-27, 2017.
681. [Chair, Panel] “Opportunities and challenges in ferroic Materials – basic research and technology transfer”, Xi’an, China, October 27, 2017.
682. [Zhongshan Distinguished Lecture] “Chiral Spin-orbitronics”, Nanjing, China, October 30, 2017.
683. “Chiral domain walls and magnetic anti-skyrmions”, CEMS symposium on Trends in Condensed Matter Physics, RIKEN, Tokyo, Japan, November 6-8, 2017.
684. Symposium on “Oxide Interfaces: Lattice and Electronic Defect Interactions (EM5)”, MRS Fall Meeting, Boston, Massachusetts, USA, November 26-December 1, 2017. [Cancelled]
685. Workshop on “Exploratory Condensed Matter Physics”, Bariloche, Argentina, November 27- December 2, 2017.
686. Workshop on “Topological Quantum Matter”, Buenos Aires, Argentina, December 3-7, 2017.
687. “Chiral spin orbitronics”, [Plenary] International Symposium on Integrated Functionalities (ISIF) 2017, Delhi, India, December 10-13<sup>th</sup>, 2017.
688. “Chiral domain walls and anti-skyrmions”, Wilhelm-and-Else-Hereaus workshop on “Spins Out of Equilibrium: Manipulating and Detecting Quantum Magnets”, Physikzentrum, Bad Honnef, Germany, January 8-10<sup>th</sup>, 2018.
689. [Plenary] “Spin Orbitronics”, Global Young Scientists Summit@one-north (GYSS-2018), Singapore, January 21-26<sup>th</sup>, 2018.
690. GYSS: Panel Discussion: Preparing for the Fourth Industrial Revolution [Panelists: John Hopcroft and Stuart Parkin], National University of Singapore, Computing, January 22, 2018.
691. GYSS: Panel Discussion: Science and the Society, Singapore, [Moderator: SMU President Arnoud De Meyer; Panelists: Francois Englert, Stuart Parkin, Gerard ‘t Hooft, Ada Yonath] NTU, School of Art, Design & Media (ADM), January 23, 2018.
692. “Spintronics: Past, Present and Future”, 2nd Otto-Stern-Symposium, Otto-Stern-Hall, Campus Jungiusstrasse, University of Hamburg, Germany, February 1st, 2018.
693. “Spin Orbitronics: chiral domain walls and magnetic anti-skyrmions”, SFB 762 International Workshop, Benedictine Abbey of Frauenwörth, Frauenchiemsee, Munich, Germany, February 26 – March 2, 2018.
694. “Magnetic antiskyrmions above room temperature in tetragonal Heusler materials”, 3rd joint WIS-MPI workshop, Mishkenot Shaananim, Jerusalem, Israel, February 25-26, 2018.
695. “Magnetic anti-skyrmions and triangular antiferromagnetism in  $Mn_3X$  and  $Mn_2XY$  compounds”, American Physical Society, Los Angeles, California, USA, March 5-9, 2018.
696. “Spin-orbitronics and Racetrack Memory”, cfaed (Center for Advancing Electronics Dresden) Symposium on Advancing Electronics, Dresden, Germany, March 19, 2018.
697. [Plenary] “Spin-orbitronics: Chiral domain walls and anti-skyrmions”, International Conference on Solid Compounds of Transition Elements (SCTE 2018), Vienna, Austria, March 25-29<sup>th</sup>, 2018.
698. “Chiral domain walls and magnetic anti-skyrmions”, Symposium on “Nanoscale Magnetic Structures and Materials” in honor of Dave Sellmyer, 2018 MRS Spring Meeting, Phoenix, Arizona, USA, April 2-6<sup>th</sup>, 2018.
699. [After dinner speech] “New materials make data storage possible”, Leopoldina Fachtag "New Challenges for Science Communication", Halle (Saale), Germany, April 16<sup>th</sup>, 2018.
700. “Magnetic antiskyrmions above room temperature in tetragonal Heusler materials”, Intermag, Singapore, April 23-27, 2018.
701. “Spin orbitronics”, Workshop on Quantum Materials, Donostia International Physics Center, San Sebastian, Spain, April 28-May 2, 2018.
702. “Interfacial Superconductivity”, Quantum Matter Institute, University of British Columbia, Vancouver, Canada, May 8-9, 2018.
703. “Magnetic anti-skyrmions above room temperature in tetragonal Heusler materials”, Q-MAC (ERC Synergy Program - Frontiers in Quantum Materials' Control) Symposium, Venice, Italy, May 22-25<sup>th</sup>, 2018.
704. “Magnetic anti-skyrmions above room temperature in tetragonal Heusler materials”, Workshop on “Future Perspectives in Novel Magnetic Materials”, Santorini, Greece, May 29-June 3<sup>rd</sup>, 2018.
705. "Nanomagnetism and spintronics" (Sol-SkyMag 2018), San Sebastian, Gipuzkoa, Spain, June 18-22, 2018.

706. [Plenary] “Chiral domain walls and magnetic anti-skyrmions”, Nano 2018, 14<sup>th</sup> International Conference on Nanostructured Materials, Hong Kong, June 24-29, 2018.
707. “Racetrack Memory: state of the art and future prospects”, 14th meeting of the working group "Materials for Nonvolatile Memories", Halle (Saale), Germany, July 3rd, 2018.
708. “Chiral spin structures: anti-skyrmions and domain walls”, Quantum Designer Physics (QDP2018), San Sebastian, Spain, July 16-19, 2018.
709. “Lecture 1: The Spin on Electronics!” and “Lecture 2: Racetrack Memory: state of the art and future prospects”, Lecturer, "Quantum Materials" Summer School, Center for Quantum Devices (QDev), Copenhagen, Denmark, August 20-24, 2018.
710. [Keynote lecturer] “Topological Spin Textures”, “Topological Matter School 2018”, Donostia-San Sebastián, Spain, August 27-31st, 2018.
711. [Plenary] “Beyond charge currents: spin and ion currents for future computing technologies”, 10<sup>th</sup> Anniversary of the London Center for Nanotechnology, London, United Kingdom, September 3, 2018.
712. [Panel Member] “Spin-orbitronics and chiraltronics for advanced memory-storage devices”, Defense Advanced Research Projects Agency (DARPA) D60 Symposium, Maryland, USA, September 5-7, 2018.
713. [Plenary/ Opening] “Beyond charge currents: spin and ion currents for future computing technologies”, 16th International Conference on Plasma Surface Engineering, Garmisch-Partenkirchen, Germany, September 17 - 21, 2018.
714. “Magnetic antiskyrmions”, 2018 Symposium on Quantum Materials Synthesis: Grand Challenges and Opportunities, Shanghai, China, Nov 15-17, 2018.
715. “Chiraltronics”, “Workshop for Topological Quantum Information”, Shanghai, China, November 19-20, 2018.
716. “Chiraltronics: chiral domain wall and anti-skyrmion data storage elements for high performance Racetrack Memories”, 46th Conference on Physics and Chemistry of Surfaces and Interfaces (PCSI-46), Santa Fe, New Mexico, January 13-17, 2019.
717. ECE Tykociner Memorial Lecture, University of Illinois at Urbana-Champaign, IL, February 14, 2019.
718. “Oxide meso-structures formed by ionic liquid gating”, 11th International Workshop on Advanced Materials (IWAM-2019), Ras Al Khaimah, UAE, February 24-26, 2019.
719. Spin Mechanics 6, Zao Onsen, Japan, February 26-28, 2019. [Cancelled]
720. [Plenary] Finnish Physical Society, Helsinki, Finland, March 7-9, 2019. [Cancelled]
721. Weizmann meets Dresden Workshop, Dresden, Germany, May 20-21, 2019.
722. CEMS Symposium on Emergent Quantum Materials, University of Tokyo, Tokyo, Japan, May 22 to 24, 2019.
723. [Plenary] International Conference on Materials for Advanced Technology (ICMAT) 2019, Singapore, June 23-28, 2019.
724. [Discussion Leader] 2019 Gordon Research Conference Spin Dynamics in Nanostructures, Les Diablerets, Switzerland, July 7- July 12, 2019.
725. [Distinguished Lecture] "4th Functional Oxide Thin Films for Advanced Energy and Information Technology Conference", 4th Functional Oxide Thin Films for Advanced Energy and Information Technology Conference, Torres Vedras, Portugal, July 17-20, 2019.
726. OUSD(R&E) Future Directions in Topological Sciences Workshop, Arlington, VA, July 30-31, 2019.
727. [Keynote] Spintronics XI Symposium of the SPIE Optics & Photonics Conference, San Diego, CA, 11 - 15 August 2019.
728. “Magnetic Technologies for the 21<sup>st</sup> Century”, “Neutrons and Muons for Magnetism – 2019 SISN Advanced School”, Ispra (Varese), Italy, September 2-6, 2019.
729. AlMagn Colloquium, Bologna, Italy, September 3, 2019.
730. VII Euro-Asian Symposium “Trends in Magnetism” (EASTMAG-2019), Ekaterinburg, Russia, September 8-13, 2019.
731. Quantum Materials Symposium 2019, “Devices and Interface Phenomena” Theme, Oxford, United Kingdom, September 23-25, 2019.
732. International Workshop “Spintronics 2019”, Ollantaytambo, Peru, October 20-25, 2019.
733. “Spintronics Meets Topology in Quantum Materials”, Kavli Institute for Theoretical Physics, Santa Barbara, California, November 12 - November 15, 2019.
734. [Plenary] “Beyond charge currents: spin and ion currents for future data storage and computing technologies”, ICONN 2020, Brisbane, Australia, Feb 9-12, 2020.
735. “Spatial spin textures formed by local ionic liquid gating”, Workshop on Advanced Materials (IWAM-2020), Ras al Khaimah (RAK), UAE, Feb 22-25, 2020.



736. "Chiral spin textures: anti-skyrmions, elliptical skyrmions and Néel skyrmions", March Meeting, American Physical Society, Denver, Colorado, USA, March 2-6, 2020 (Meeting cancelled).
737. "Current status of "Race-track Memory", 4th International Conference "Emerging Materials, Technologies and Applications for Non-volatile Memory Devices", CIMTEC 2020, Montecatini Terme, Italy, June 15-20, 2020 (meeting cancelled).
738. "Antiskyrmions and Bloch skyrmions in Heusler Compounds: non collinear spin textures with application to Racetrack Memory", 2020 Joint Conference of the Condensed Matter Divisions of EPS (CMD) and RSEF (GEFES), Madrid, Spain, August 31 – September 4, 2020 (Online).
739. "Skyrmions in Heuslers", Claudia Felser and Stuart Parkin, "Skyrmionics: Topological Spin Phenomena in Real-Space for Applications", Retreat- & Networking-Meeting SPP2137, Bad Honnef, Germany, September 3-4, 2020.
740. "Unusual electron orders: Weyl semi-metals, Heusler alloys, and anti-skyrmions", Symposium on "Characterization of Static and Dynamic Disorder in Condensed Phase Materials", Virtual SSRL/LCLS Users' Meeting, September 28th - October 9th, 2020.
741. [Plenary Opening Talk] "Spintronic Memories", International Conference on Emerging Electronics (ICEE-2020), Indian Institute of Technology, Delhi, India, November 26-28, 2020.
742. Invited Talk: Symposium NM04: "Material Systems for Manipulating and Controlling Magnetic Skyrmions", 2020 Fall Materials Research Society (MRS) Meeting, Boston, Massachusetts, November 29 - December 4, 2020.
743. "Chiral non-collinear spin textures", QPQIS-2020 (International Symposium on Frontier Issues in Quantum Physics and Quantum Information Sciences), an online symposium hosted by BAQIS, December 9th, 2020. [online]
744. [Distinguished Lecture] ICONN-2021, SRM Institute of Science and Technology, Chennai, India, February 1-3, 2021.
745. [Distinguished lecture] 5th Functional Oxide Thin Films, Puerto Vallarta, Mexico, 2326, Feb 2021.
746. "Strong influence of magneto-dipole interactions on size and form of antiskyrmions and skyrmions", American Physical Society (APS) March Meeting, March 15-19, 2021. [online]
747. "Chiral materials for spintronic memories", Materials Challenges for Memory Conference sponsored by APL Materials, April 11-13<sup>th</sup>, 2021.
748. Invited Talk: MRS Spring 2021 meeting, Symposium on "Topological and Quantum Phenomena in Intermetallic Compounds and Heterostructures", Seattle, WA, USA, April 18-23<sup>rd</sup>, 2021.

#### *Invited Talks at Universities and Industrial Laboratories*

1. "Conduction Electron-Local Moment Interaction in the 3d Transition Metal Intercalates of the Nb and Ta Dichalcogenides", LTP/PCS Seminar, University of Cambridge, U.K., January 1979.
2. "Recent Developments in Organic Superconductors", University of Santa Barbara, California, August 1981.
3. "Organic Superconductivity", San Jose State University, California, September 1981.
4. "Organic Supraconductivité", Laboratoire Paul Pascal, Université de Bordeaux, Talence, France, October 1981.
5. "Metal-Insulator Transitions and Superconductivity in the Families of Organic Linear Chain Compounds: (TMTSeF)<sub>2</sub>X and (TMTTF)<sub>2</sub>X", The Cavendish Laboratory, University of Cambridge, December 1981.
6. "A Review of Organic Superconductivity", IBM Research Laboratory, San Jose, California, February 1982.
7. "Organic Superconductivity", Solid State Physics Seminar, University of Berkeley, California, March 1982.
8. "Recent Developments in Organic Superconductors", Solid State Physics Seminar, University of Stanford, California, April 1982.
9. "A Family of Magnetic Layered Intercalates", IBM Research Laboratory, San Jose, California, August 1982.
10. "Metal-Insulator Transitions and Superconductivity in Organic Linear Chain Conductors", Solid State Physics Seminar, University of California at Los Angeles, November 1982.
11. "The First Sulphur Derived Organic Superconductor", Surface Science Informal Seminar, The Cavendish Laboratory, University of Cambridge, January 1983.
12. "The Unusual Magnetic Properties of Co<sub>1/3</sub>NbS<sub>2</sub>", Solid State Physics Seminar, Argonne National Laboratory, Argonne, December 1983.

13. "Structure-Property Relationships in Organic Conductors- Mainly ET", Walther-Meissner-Institut für Tieftemperaturforschung der Bayerischen Akademie der Wissenschaften, October 21, 1985.
14. "Review of High  $T_c$  Work in the Tl-Ca-Ba-Cu-O system", presentation to Juri Matisoo, Director, Almaden Research Center, April 22nd, 1988.
15. "Superconductivity in Two Families of Tl-Ca-Ba-Cu Oxides", HITC Seminar, IBM T.J. Watson Research Center, Yorktown Heights, April 25, 1988.
16. "Volume Superconductivity at 125 K in  $Tl_2Ca_2Ba_2Cu_3O_x$ ", presentation to John Armstrong, IBM Vice-president and Director of Research, IBM Corporation, T.J. Watson Research Center, Yorktown Heights, April 26th, 1988.
17. "High Temperature Superconductivity", presentation to Martin Reiser, Director, IBM Zurich Research Laboratory, Almaden Research Center, May 19th, 1988.
18. "Superconductivity in the Tl-Ca-Ba-Cu-O System", Dept. of Materials Science and Mineral Engineering, University of Berkeley, July 6, 1988.
19. "High Temperature Superconductivity", presentation to Danish Minister of Industry, Almaden Research Center, July 7th, 1988.
20. "High Temperature Superconductivity in the Tl-Ba-Ca-Cu-O Family", Université de Bordeaux, September 19, 1988.
21. "Multi-Layered NiFe/MnFe Thin Film Structures", Université Paris-Sud, Orsay, France, October 3, 1988.
22. "High Temperature Superconductivity: Planes versus Holes", Seminaire generale, Université Paris-Sud, Orsay, France, October 5, 1988.
23. "High Temperature Superconductivity: Planes versus Holes", Grenoble, France, October 7, 1988.
24. "A model Family of High Temperature Superconductors", Cavendish Laboratory, University of Cambridge, October 12, 1988.
25. "High Temperature Superconductivity: Planes versus Holes", San Jose State University, California, October 25, 1988.
26. "High Temperature Superconductivity in the Tl-Ca-Ba-Cu-O Family", Dept. of Physics Seminar, University of California at Santa Cruz, April 19, 1989.
27. "Giant Magneto-resistance and Exchange Oscillations in Sputtered Multi-Layered Structures", presentation to John Armstrong, IBM Vice-president and Director of Research, IBM Corporation, September 27, 1989.
28. "Giant Magnetoresistance in Sputtered Metallic Superlattices", Dept. of Physics, University of California at San Diego, November 15, 1989.
29. "Oscillations in Exchange Coupling and Magnetoresistance in Superlattice Structures", Solid State Seminar, Imperial College, University of London, January 10th, 1990.
30. "Oscillations in Exchange Coupling and Magnetoresistance in Superlattice Structures", Cavendish Laboratory, University of Cambridge, January 11th, 1990.
31. "Giant Magnetoresistance in Sputtered Metallic Superlattices", presentation to Juri Matisoo, Director, Almaden Research Center, Almaden Research Center, February 26, 1990.
32. "Giant Magnetoresistance and Oscillatory Exchange Coupling between Ferromagnetic Layers", IBM Yorktown Heights, May 1, 1990.
33. "Giant Magnetoresistance and Oscillations in Exchange Coupling in Sputtered Metallic Superlattices", presentation to J.C. McGroddy, IBM Vice-president and Director of Research, IBM Corporation, Almaden Research Center, May 11, 1990.
34. "Oscillatory Exchange Coupling between Ferromagnetic Layers", General Colloquium, Institut für Atom und Festkörperphysik, Freie Universität, Berlin, June 7, 1990.
35. "Oscillatory Exchange Coupling between Ferromagnetic Layers", Solid State Luncheon Group, University of California at Irvine, June 15, 1990.
36. "Giant Magnetoresistance and Antiferromagnetic Coupling in Sputtered Metallic Superlattices", National Synchrotron Light Source, Brookhaven National Laboratory, Long Island, New York State, July 13, 1990.
37. "Giant Magnetoresistance and Oscillatory Interlayer Magnetic Coupling in Sputtered Metallic Superlattices", Department of Physics, University of California, Santa Cruz, California, December 5, 1990.
38. "Interlayer Exchange and Magnetoresistance in Magnetic Metallic Multilayers", IFF-Altbau, KFA, Julich, Germany, December 21, 1990.
39. "Giant Magnetoresistance and Oscillatory Interlayer Exchange Coupling in Magnetic Metallic Multilayers", Kyoto University, March 4, 1991.
40. "Giant Magnetoresistance and Oscillatory Interlayer Exchange Coupling in Magnetic Metallic Multilayers", Institute for Materials Research, Tohoku University, Sendai, Japan, March 11, 1991.

41. "Giant Magnetoresistance and Oscillatory Interlayer Exchange Coupling in Magnetic Metallic Multilayers", Central Research Laboratories, NEC, Miyazakidai, Tokyo, March 13, 1991.
42. "Giant Magnetoresistance and Oscillatory Interlayer Exchange Coupling in Magnetic Metallic Multilayers", Hitachi Central Research Laboratory, Kokubunji, Tokyo, March 14, 1991.
43. "Giant Magnetoresistance and Oscillatory Interlayer Exchange Coupling in Cu Based Multilayer Structures", presentation to Juri Matissoo, Director Almaden Research Center, March 29, 1991.
44. "Giant Magnetoresistance, Oscillatory Exchange Coupling and Device Applications", presentation to Juri Matissoo, Director, Almaden Research Center, April 16, 1991.
45. "Giant Magnetoresistance and Oscillatory Interlayer Exchange Coupling in Magnetic Metallic Multilayers", Condensed Matter Physics Seminar, Michigan State University, May 20, 1991.
46. "Giant Magnetoresistance and Oscillatory Interlayer Coupling in Metallic Multilayered Structures", Center for Solid State Science Seminar, Arizona State University, October 14, 1991.
47. "Giant Magnetoresistance in Magnetic Multilayers and Sandwiches: Spin Dependent Scattering from Magnetic Interface States", Center for Magnetic Recording Research, University of California, San Diego, December 3, 1991.
48. "Giant Magnetoresistance, Oscillatory Exchange Coupling and Device Applications", presentation to John Akers, Chairman of the Board, IBM Corporation, Almaden Research Center, June 1, 1992.
49. "Giant Magnetoresistance and Oscillatory Exchange Coupling in Magnetic Multilayers", Departamento de Fisica, Universidade Federal Fluminense, Niteroi, Brazil, September 30, 1992.
50. "Giant Magnetoresistance and Oscillatory Exchange Coupling in Magnetic Multilayers", San Jose State University, October 15, 1992.
51. "Giant Magnetoresistance and Oscillatory Exchange Coupling in Magnetic Multilayers", Condensed Matter Physics Seminar, Department of Physics, University of California, Berkeley, November 11, 1992.
52. "Giant Magnetoresistance and Oscillatory Exchange Coupling in Magnetic Multilayers", Solid State Physics Seminar, Ohio State University, January 21, 1993.
53. "Oscillatory Interlayer Coupling in Cu-Ni Alloys", National Institute of Science and Technology, Washington, D.C., February 11, 1993.
54. "Giant Magnetoresistance in Transition Metal Multilayers", Naval Research Laboratory, Washington, D.C., February 12, 1993.
55. "Origin of Giant Magnetoresistance in Metal Multilayers and Alloys", IBM Fujisawa, Fujisawa, Japan, March 10, 1993.
56. "Giant Magnetoresistance in Transition Metal Multilayers", Department of Physics Seminar, University of Illinois, Urbana, April 30, 1993.
57. "Origin of Giant Magnetoresistance in Metal Multilayers and Alloys", Data Storage Systems Seminar, Carnegie Mellon University, Pittsburgh, May 3, 1993.
58. "Giant Magnetoresistance and Oscillatory Interlayer Coupling in Magnetic Multilayers", Argonne National Laboratory, May 17, 1993.
59. "Giant Magnetoresistance - Recent progress" Institut d'Electronique Fondamentale, Université Paris-Sud, Orsay, France, June 26, 1993.
60. "Giant Magnetoresistance in Magnetic Multilayers: Fundamental and Recording Aspects" Philips Research Laboratory, Eindhoven, The Netherlands, June 29, 1993.
61. "Giant magnetoresistance and oscillatory exchange coupling in magnetic multilayers", Centro Brasileiro de Pesquisas Fisicas (CBPF/CNPq), Rio de Janeiro, Brazil, October 8, 1993.
62. "Current Understanding of Giant magnetoresistance in Magnetic Multilayers", Condensed Matter Seminar, Physics Department, University of California, Davis, December 9, 1993.
63. "Giant Magnetoresistance and Oscillatory Interlayer Coupling in Magnetic Multilayers", Physics Colloquium, Wayne State University, Detroit, Michigan, January 20, 1994.
64. "Giant Magnetoresistance and Materials Engineering", presentation to Louis V. Gerstner, Chairman of the Board, IBM Corporation, Almaden Research Center, January 31, 1994.
65. "Origin of Giant Magnetoresistance in Magnetic Multilayers and Alloys", Physical Sciences Seminar, IBM Research Division, T.J. Watson Research Center, Yorktown Heights, New York, February 18, 1994.
66. "Giant Magnetoresistance in Magnetic Multilayers and Alloys", presentation to Paul M. Horn, Director, IBM Almaden Research Center, and Vice-President for Storage, IBM Research Division, Almaden Research Center, San Jose, California, February 21, 1994.
67. "Interfacial Origin of Giant Magnetoresistance in Magnetic Multilayers and Granular Alloys", Department of Physics Seminar, University of California, Berkeley, California, April 20, 1994.

68. "Giant Magnetoresistance: Science and Technology", presentation to Mary L. Good, Under Secretary for Technology, U.S. Department of Commerce, Almaden Research Center, San Jose, California, May 17, 1994.
69. "Artificially Engineered Metals: Giant Magnetoresistance and Oscillatory Interlayer Exchange Coupling in Transition Metal Multilayers" IBM Research Laboratory, Zurich, June 30, 1994.
70. "Dependence of Giant Magnetoresistance on Crystallographic Orientation in Cu based Multilayers", Department of Physics, New York University, New York, September 12, 1994.
71. "Giant Magnetoresistance II", Condensed Matter Physics Seminar, University of California Berkeley, California, September 26, 1994.
72. "Magnetic Multilayers: Recent Developments", Solid State Physics Seminar, Ohio State University, October 19, 1994.
73. "Crystalline Multilayers and Sandwiches via Sputtering", Institut für Angewandte Physik, Heinrich-Heine-Universität Düsseldorf, Düsseldorf, Germany, December 12, 1994.
74. "Origin of Giant Magnetoresistance", University of Duisburg, Duisburg, Germany, December 14, 1994
75. "Giant Magnetoresistance: Science and Technology", Los Alamos National Laboratory, Los Alamos, January 5, 1995.
76. "Artificially Engineered Metal Multilayers: Transport and Magnetic Properties", Physics Colloquium, University of Houston, Houston, Texas, January 24, 1995.
77. "Giant Magnetoresistance in Magnetic Nano-structures", University of Uppsala, Sweden, February 8, 1995.
78. "Giant Magnetoresistance in Magnetic Nano-structures", Royal Institute of Technology, Stockholm, Sweden, February 10, 1995.
79. "Giant Magnetoresistance in Sputtered Crystalline Magnetic Multilayers", Hitachi Central Research Laboratory, June 7th, 1995.
80. "Giant Magnetoresistance: Science and Technology", Department of Physics, Nanjing University, China, September 22, 1995.
81. "Giant Magnetoresistance: Science and Technology", Department of Physics, Suzhou University, China, September 25, 1995.
82. "Giant Magnetoresistance in Magnetic Nano-structures", Francis Bitter Magnet Laboratory, M.I.T., January 29, 1996.
83. "Giant Magnetoresistance in Magnetic Nano-structures: Science and Technology", Physics and Materials Science Colloquium, AT&T Bell Labs, Murray Hill, January 30, 1996.
84. "New Materials for Magnetic Memories and Readout", Physics Colloquium, Brookhaven National Laboratory, May 21, 1996.
85. "Magnetic Tunnel Junctions", Siemens Corporate Technology, Erlangen, Germany, February 5, 1997.
86. "Magnetic Materials for Information Storage", Physics Colloquium, John Hopkins University, Baltimore, Maryland, February 20, 1997.
87. "Large Magnetoresistance in Magnetic Tunnel Junctions", Condensed Matter Physics Seminar, Stanford University, May 8, 1997.
88. "Giant Magnetoresistance, Tunnel Magnetoresistance and their Applications", Institut für Festkörperforschung, Forschungszentrum, Jülich, Germany, August 28, 1997.
89. "Magnetoresistance of Shadow-masked and Micro-structured Magnetic Tunneling Junctions", Korea Advanced Institute of Science and Technology, Taejon, Korea, November 4, 1997.
90. "Spin-dependent Transport in Magnetic Nano-structures", Samsung Advanced Institute of Technology, Suwon, Korea, November 5, 1997.
91. "Tunneling into the Future", Max-Planck Institut für Mikrostrukturphysik, Halle, Germany, February 10, 1998.
92. "Magnetoresistance of Shadow-masked and Micro-structured Magnetic", Thompson-CSF, Orsay, France, February 13, 1998.
93. "Spin dependent tunneling in planar magnetic tunnel junctions", Department of Applied Physics, Tohoku University, Sendai, Japan, August 27, 1998.
94. "Magnetic Thin Film Materials for Information Storage", Physics Colloquium, Cal State University, Northridge, California, October 7, 1998.
95. "Frontiers of Magnetic Materials", Department of Chemical Engineering and Material Science, University of Minnesota, Minneapolis, November 24, 1998.
96. "Magnetic Tunnel Junctions and Application to Non-Volatile Memory", Solid State Seminar Series, Caltech, Pasadena, California, December 8, 1998.
97. "Giant Magnetoresistance and Magnetic Tunnel Junctions", Thin Film Users Group of the Northern California Chapter of the American Vacuum Society, Santa Clara, California, February 10, 1999.

98. "Magnetic Materials for Information Storage", Physics Colloquium, University of Delaware, Newark, Delaware, March 3, 1999.
99. "Science and Technology of Magnetic Tunneling Junctions", Department of Physics & Astronomy, University of Glasgow, March 18, 1999.
100. "Magnetic tunneling devices", Department of Materials Science and Engineering, University of Virginia, Charlottesville, Virginia, November 3, 1999.
101. "High performance magnetic random access memory using magnetic tunnel junction storage cells", IEEE Magnetics Society Seminar, University of California, San Diego, November 11, 1999.
102. "Magnetic tunnel junction recording read heads: prospects", IBM Japan Ltd., Fujisawa, Japan, December 1, 1999.
103. "Magnetic Tunnel Junctions", Fujitsu Laboratories Ltd., Atsugi, Japan, December 2, 1999.
104. "An Advanced Magnetic Random Access Memory", Cavendish Laboratory, University of Cambridge, January 14, 2000.
105. "Magnetic tunneling junctions: physics and applications", Department of Engineering and Applied Science, Harvard University, Boston, March 3, 2000.
106. "Magnetic Random Access Memory", Department of Physics, University of Utah, Salt Lake City, April 13, 2000.
107. "Ultra thin tunnel barriers for MRAM", IBM Material Research Council Workshop on "Ultrathin Dielectrics in Logic, Memory and Storage", Yorktown Heights, September 11-13, 2000.
108. "The Perfect Memory", Distinguished Lecturer, Department of Materials Science and Engineering, M.I.T., Boston, April 3, 2001.
109. "Spinning into the Future: The Physics and Applications of Giant and Tunneling Magnetoresistance", Distinguished Lecturer, Chinese University of Hong Kong, Hong Kong, April 11, 2001.
110. "Magnetic Tunnel Transistors: A source of highly spin polarized electrons", Tokyo Institute of Technology, Yokohama, Japan, June 11, 2001.
111. "Applications of Magnetic Tunneling", IBM Storage Technology Division, Fujisawa, Tokyo, Japan, June 12, 2001.
112. "Spinning into the future: the physics and applications of giant and tunneling magnetoresistance", Dipartimento di Scienze Chimiche, Fisiche e Matematiche, Università degli Studi dell'Insubria, Como, Italy, July 2, 2001.
113. "Spintronics!", Physics Colloquium, Brown University, Providence, Rhode Island, April 15, 2002.
114. "Spintronics!", Physics Colloquium, Northwestern University, Chicago, Illinois, April 19, 2002
115. "Instant Access Memory- Tunneling into the Future with Magnetic Random Access Memory", Colloquium, Institute of Applied Physics (IAP), University of Hamburg, Germany, April 25, 2002.
116. "Magnetic Tunneling and the Perfect Memory!", Department of Physics, University of Maryland, Washington, June 3, 2002.
117. "Magnetic Tunneling Junctions and Transistors: Magnetic Memory and Field Sensors", ALS/CXRO seminar, Advanced Light Source, Berkeley, July 24, 2002.
118. "Spintronics materials and devices", Seminar, Instituto de Fisica, Universidade Federal do Rio de Janeiro, Brazil, October 25, 2002.
119. "Magnetic tunneling junctions and applications", Materials Science Seminar, University of Wisconsin, November 11, 2002.
120. "Spintronics!", Cavendish Physical Society lecture, Cavendish Laboratory, Cambridge, United Kingdom, February 26, 2003.
121. "Spintronics", Colloquium, University of Illinois at Urbana-Champaign, April 10, 2003.
122. "Tunnel spin injectors", Stanford University, Stanford, California, September 2, 2003.
123. "MRAM Fundamentals and basic magnetic engineering", ALTIS Semiconductor, Corbeil-Essonnes, France, January 16, 2004.
124. "The Spin on Electronics!", Physics Colloquium, University of Alabama, Tuscaloosa, Alabama, April 28, 2004.
125. "Tunnel spin injectors for semiconductor spintronics", Korean Institute for Science and Technology (KIST), Seoul, Korea, July 7, 2004.
126. "What can Spin do for you?", Dinner seminar, Chinese American Information Storage Society (CAISS), China Stix Restaurant, Santa Clara, California, July 21, 2004.
127. "Spintronic materials and devices", Yale University, New Haven, Connecticut, November 3, 2004.
128. "Spin polarized currents for sensor, memory and logic devices", Physics Colloquium, RWTH Aachen, Germany, December 20, 2004.

129. "The Spin on Electronics!", Physics Colloquium, University of Toronto, Toronto, Ontario, Canada, January 20, 2005.
130. "A Spin on Electronics!", Imperial College, London, England, February 14, 2005.
131. "Magnetic Shift Register- a Novel Storage Class Memory", IBM Zurich Research Laboratory, Zurich, Switzerland, February 16, 2005.
132. "The Spin on Electronics!", Physics Colloquium, Sonoma State University, Rohnert Park, California, March 1<sup>st</sup>, 2005.
133. "Giant spin polarized tunneling in MgO based tunnel junctions", IEEE Magnetics Society, Santa Clara, California, March 29<sup>th</sup>, 2005.
134. "Origin of Spin Polarized Tunneling", Advanced Light Source, Lawrence Berkeley Laboratory, March 31<sup>st</sup>, 2005.
135. "MRAM integration", 5<sup>th</sup> Presentation in Public Seminar Series entitled "Novel Integration in Advanced Electronic Systems", Stanford University, April 28<sup>th</sup>, 2005.
136. "A spin on electronics!", Center for Nanoscale Science & Engineering, University of California at Riverside, June 1<sup>st</sup>, 2005.
137. "Spin polarized tunneling", National Institute of Standards and Technology (NIST), Washington, D.C., July 1<sup>st</sup>, 2005.
138. "Current induced domain wall motion", RWTH Aachen, Germany, August 11<sup>th</sup>, 2005.
139. "Magnetic Memories: Race-track memory: a novel storage class memory", Advanced Light Source, Lawrence Berkeley Laboratory, September 1, 2005.
140. "Origin of tunneling spin polarization", Paul Drude Institut, Berlin, Germany, January 16, 2006.
141. "Spintronics", Physics Colloquium, University of Hannover, Germany, January 17, 2006.
142. "Current driven domain wall motion in magnetic nanowire racetracks", RWTH Aachen, Germany, January 20, 2006.
143. "The spin on electronics", Physics Colloquium, MPI-Stuttgart, Germany, January 24, 2006.
144. "Domain wall motion in magnetic nano-wires: A novel magnetic race-track storage class memory", NanoSystems Seminar, University of California, Los Angeles, March 7, 2006.
145. "Magnetic race-track memory: a novel storage class memory based on current induced motion of domain walls", Physical Sciences Seminar, IBM T.J. Watson Research Center, Yorktown Heights, New York, March 31, 2006.
146. "Magnetic race-track memory: a novel storage class memory based on current induced motion of domain walls", Physics Seminar, New York University, New York, April 1, 2006.
147. [Distinguished Lecturer] "The Magnetic race-track memory: a hard disk drive on a chip!", Samsung Information Systems America (SISA) Mass Storage Invitational Lecture, San Jose, California, September 15<sup>th</sup>, 2006.
148. "The Magnetic Race-track: a Novel Spintronic Memory", Physics Colloquium, Arizona State University, Phoenix, Arizona, October 19<sup>th</sup>, 2006.
149. "The Magnetic Race-Track memory: a hard disk drive on a chip", Physics seminar, Group Farle, Universitaet Duisburg-Essen, germany, October 27<sup>th</sup>, 2006.
150. "Giant tunneling magnetoresistance and tunneling spin polarization in magnetic tunnel junctions", Western Digital, Fremont, California, November 3<sup>rd</sup>, 2006.
151. "The Magnetic Racetrack: current driven dynamics of magnetic domain walls", Physics seminar, Leiden University, The Netherlands, November 15<sup>th</sup>, 2006.
152. "The Magnetic Racetrack", Seminar, Physics Department, National Taiwan University, Taipei, Taiwan, November 22<sup>nd</sup>, 2006.
153. "The Magnetic Racetrack: a hard disk drive on a chip!", Quantum Science Research, Hewlett Packard Laboratories, Palo Alto, California, February 1<sup>st</sup>, 2007.
154. "The Magnetic Racetrack: current induced motion of domain walls", Condensed Matter Physics Seminar, Oak Ridge National Laboratory, Oak Ridge, Tennessee, March 30<sup>th</sup>, 2007.
155. "The Racetrack Memory: current induced motion of magnetic domain walls", Seminar (hosted by Prof. Tarucha), Hongo Campus, University of Tokyo, Japan, September 13<sup>th</sup>, 2007.
156. "The Racetrack Memory: current induced precessional motion of magnetic domain walls", Seminar (hosted by Prof. Munekata), Tokyo Institute of Technology, Suzukakedai campus, Yokohama, Japan, September 14<sup>th</sup>, 2007.
157. "The Spin on Electronics!", Colloquium, Australian Nuclear Science and Technology Organisation (ANSTO), Sydney, Australia, October 12<sup>th</sup>, 2007.

158. “The Racetrack Memory”, Colloquium, Hitachi Global System Technologies, San Jose, California, October 31, 2007.
159. “The Spin on Electronics!”, Special Seminar in honor of my being named a Distinguished Chair Professor, National Yunlin University of Science and Technology, Douliou, Taiwan, November 12, 2007.
160. “Racetrack Memory: current status and future prospects”, Industrial Technology Research Institute (ITRI), Hsinchu, Taiwan, November 13<sup>th</sup>, 2007.
161. “The Racetrack Memory: Physics and applications”, Samsung Advanced Institute of technology (SAIT), Suwon, Korea, November 15<sup>th</sup>, 2007.
162. “Current induced domain wall dynamics”, Korea Institute of Science & Technology (KIST), Cheongyang, Seoul, Korea, November 15<sup>th</sup>, 2007.
163. “The Spin on Electronics!”, Seminar, Department of Physics, Università degli Studi di Milano, Milan, Italy, November 19<sup>th</sup>, 2007.
164. “The Racetrack Memory: physics of current induced motion of domain walls”, Colloquium, Johannes Gutenberg-Universität, Mainz, Germany, November 21<sup>st</sup>, 2007.
165. “The Racetrack Memory: physics of current induced motion of domain walls”, Colloquium, Universität Kaiserslautern, Kaiserslautern, Germany, November 22<sup>nd</sup>, 2007.
166. “The Racetrack Memory: physics of current induced motion of domain walls”, Colloquium, Physikalisches Institut (IIA), University of Aachen, Aachen, Germany, November 23<sup>rd</sup>, 2007.
167. “The Spin on Electronics!”, Colloquium, University of California, Davis, December 3, 2007.
168. [IEEE Distinguished Lecturer Presentation] “The Spin on Electronics!”, Colloquium, Center for Nanoscale Materials, Argonne National Laboratory, Argonne, Illinois, May 28, 2008.
169. [IEEE Distinguished Lecturer Presentation] “The Racetrack memory: a Current-Controlled Magnetic Domain-Wall Nanowire Shift Register”, National Taiwan University, Taipei, Taiwan, August 4<sup>th</sup>, 2008.
170. [IEEE Distinguished Lecturer Presentation] “Racetrack Memory: a current controlled domain wall shift register”, Emulux Corporation, Santa Clara, California, August 19<sup>th</sup>, 2008.
171. [IEEE Distinguished Lecturer Presentation] “Racetrack Memory: a current controlled domain wall shift register”, Unité Mixte de Physique CNRS/Thales, Thales Research and Technology, Palaiseau, France, August 29<sup>th</sup>, 2008.
172. [IEEE Distinguished Lecturer Presentation] “Racetrack Memory: a current controlled domain wall shift register”, Physics Colloquium, Lund University, Sweden, September 22<sup>nd</sup>, 2008.
173. [IEEE Distinguished Lecturer Presentation] “The Spin on Electronics!”, Colloquium, Colorado State University, Fort Collins, Colorado, September 30<sup>th</sup>, 2008.
174. [IEEE Distinguished Lecturer Presentation] “The Spin on Electronics!”, Colloquium, Colorado, Colorado, October 1<sup>st</sup>, 2008.
175. [IEEE Distinguished Lecturer Presentation] “The Spin on Electronics!”, Colloquium, IEEE Magnetism Society, Boulder, Colorado, October 1<sup>st</sup>, 2008.
176. [IEEE Distinguished Lecturer Presentation] “The Spin on Electronics!”, Colloquium, Lawrence Berkeley National Laboratory, October 6<sup>th</sup>, 2008.
177. [IEEE Distinguished Lecturer Presentation] “Racetrack Memory: a current controlled domain wall shift register”, Physics Colloquium, Lund University, Sweden, September 22<sup>nd</sup>, 2008.
178. [IEEE Distinguished Lecturer Presentation] “Racetrack Memory: a current controlled domain wall shift register”, Colloquium, Institute for Solid State Physics, The University of Tokyo, Tokyo, Japan, October 23<sup>rd</sup>, 2008.
179. [IEEE Distinguished Lecturer Presentation] “Racetrack Memory: a current controlled domain wall shift register”, Colloquium, National Institute for Materials Science (NIMS), Tsukuba, Japan, October 24<sup>th</sup>, 2008.
180. [IEEE Distinguished Lecturer Presentation] “Racetrack Memory: current induced domain wall dynamics”, Osaka University, Japan, December 2, 2008.
181. “Exotic Phenomena in Oxide heterostructures”, Colloquium, RWTH Aachen, Aachen, Germany, March 18<sup>th</sup>, 2009.
182. [Distinguished International Colloquium] “The Spin on Electronics!”, Humboldt Universität and the Science City, Berlin-Adlershof, April 29, 2009.
183. [Special Seminar] “Spin torque driven dynamics of magnetic domain walls in nanowires”, Center for Nanospinics of Spintronics Materials, KAIST, Daejeon, Korea, May 21<sup>st</sup>, 2009.
184. “Racetrack Memory: Domain Wall Dynamics”, Department of Electrical Engineering Seminar, National University of Singapore, July 2, 2009.
185. “The Spin on Electronics!”, Instituto de Ciencia de Materiales de Madrid, Madrid, Spain, September 11, 2009.

186. "Racetrack Memory: recent developments", ITRI, Hsinchu, Taiwan, November 18, 2009.
187. "Exotic phenomena in spintronic nanostructures: from giant spin dependent tunneling to unconventional ferromagnetism", Physics Colloquium, National Taiwan University, Taipei, Taiwan, November 19, 2009.
188. "Racetrack Memory: dynamics of domain wall pinning", Special Lecture, KAIST, November 24<sup>th</sup>, 2009.
189. "Exotic Phenomena in Oxide Films and Heterostructures", Special Lecture, KAIST, November 25<sup>th</sup>, 2009.
190. "Racetrack memory: dynamics of domain wall depinning", Fraunhofer-Institute for Non-Destructive Testing, Dresden, Germany, January 14, 2010.
191. "Racetrack memory: dynamics of domain wall depinning", United States Patent and Trademark Office, Washington, DC, January 22, 2010.
192. [Distinguished Lecture] "Racetrack Memory", Air Force Research Laboratory (AFRL), Rome, New York, February 16, 2010.
193. "Racetrack Memory", Colloquium, IEEE Electron Devices Chapter Meeting, State University of New York Institute of Technology (SUNYIT), Utica, New York, February 16, 2010.
194. "Racetrack Memory", Physics Colloquium, University of Melbourne, Melbourne, Australia, February 23<sup>rd</sup>, 2010.
195. [Distinguished Lecture] "The Spin on Electronics!" ANSTO Distinguished Lecture, Australian Nuclear Science and Technology Organization (ANSTO), AINSE Theatre, Lukas Heights, Sydney, Australia, February 25<sup>th</sup>, 2010.
196. "Spintronic Memories: past, present and future", Special Colloquium, Institute of Information Science and Engineering, Fudan University, Shanghai, China, March 19<sup>th</sup>, 2010.
197. "Racetrack Memory", Colloquium, Tsinghua University, Beijing, China, March 22<sup>nd</sup>, 2010.
198. Zernike Institute Colloquium, Zernike Institute for Advanced Materials, University of Groningen, The Netherlands, June 17<sup>th</sup>, 2010.
199. "Plasticity in oxide Nano-Devices", IBM Zurich Research Laboratory, Zurich, Switzerland, October 15<sup>th</sup>, 2010.
200. "Domain wall dynamics: field and current driven domain wall momentum", IIT Bombay, India, December 9<sup>th</sup>, 2010.
201. "Nano Magnetic Logic: Magnetic Quantum Cellular Automata", Physics of Nanostructures Group Seminar, Eindhoven University of Technology, Eindhoven, The Netherlands, January 25<sup>th</sup>, 2011.
202. "Racetrack Memory: the Future Third Dimension of Data Storage", Web seminar to 60 universities in India, January 28<sup>th</sup>, 2011.
203. "Racetrack Memory: the Future Third Dimension of Data Storage", ASML Research, Veldhoven, the Netherlands, January 28<sup>th</sup>, 2011.
204. "The Spin on Electronics! - Science and Technology of spin currents in nano-materials and nano-devices", Colloquium, University of Kassel, Germany, March 30<sup>th</sup>, 2011.
205. "Ultrafast dynamics of electric field driven metallization in a Mott insulator", University of Köln, Germany, March 31<sup>st</sup>, 2011.
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86. "High performance magnetic tunnel junction barriers with amorphous materials", S.S.P. Parkin, issued as patent number 7,807,218 by the United States Patent and Trademark Office, October 5<sup>th</sup>, 2010.
87. "Spin-current switchable magnetic memory element and method of fabricating the memory element", J.Z. Sun, and S.S.P. Parkin, filed October 9<sup>th</sup>, 2007, issued as patent number 7,894,245 by the United States Patent and Trademark Office, February 22<sup>nd</sup>, 2011.
88. "Magnetic tunnel barriers and associated magnetic tunnel junctions with high tunneling magnetoresistance", S.S.P. Parkin, issued as patent number 7,906,231 by the United States Patent and Trademark Office, March 15<sup>th</sup>, 2011.
89. "Spin-current switched magnetic memory element suitable for circuit integration and method of fabricating the memory element", J.Z. Sun, R. Allenspach, S.S.P. Parkin, J.C. Slonczewski, and B.D. Terris, filed August 27<sup>th</sup>, 2009, issued as patent number 7,943,399 by the United States Patent and Trademark Office, May 17<sup>th</sup>, 2011.
90. "Stochastic synapse memory element with spike-timing dependent plasticity (STDP)", D.S. Modha and S.S.P. Parkin, filed March 1, 2009, issued as patent number 7,978,510 by the United States Patent and Trademark Office, July 12<sup>th</sup>, 2011.
91. "Robust self-aligned process for sub-65nm current-perpendicular junction pillars", X. Jiang, S.S.P. Parkin and J. Sun, filed January 26, 2007, issued as patent number 7,993,535 by the United States Patent and Trademark Office, August 9<sup>th</sup>, 2011.
92. "MgO Tunnel barriers and method of formation", S.S.P. Parkin, filed August 22, 2003, issued as patent number 8,008,097 by the United States Patent and Trademark Office, August 30<sup>th</sup>, 2011.
93. "Resistive switching in nitrogen doped MgO", S.S.P. Parkin, X. Jiang, M. Samant and C.-H. Yang, filed December 11<sup>th</sup>, 2009, and issued as patent number 8,227,896 by the United States Patent and Trademark Office, July 24<sup>th</sup>, 2012.
94. "Spin-current switchable magnetic memory and method of fabricating the memory element", J.Z. Sun, and S.S.P. Parkin, filed February 4<sup>th</sup>, 2011, issued as patent number 8,310,863 by the United States Patent and Trademark Office, November 13<sup>th</sup>, 2012.
95. "Magnetic Spin Shift Register Memory", E.A. Joseph, S.S.P. Parkin and M.B. Rothwell, filed July 9<sup>th</sup>, 2010, issued as patent number 8,467,221 by the United States Patent and Trademark Office, June 18<sup>th</sup>, 2013.
96. "Magnetic Spin Shift Register Memory", E.A. Joseph, S.S.P. Parkin and M.B. Rothwell, filed July 9<sup>th</sup>, 2010, issued as patent number 8,518,718 by the United States Patent and Trademark Office, August 27<sup>th</sup>, 2013.
97. "Spin-current switched magnetic memory element suitable for circuit integration and method of fabricating the memory element", J.Z. Sun, R. Allenspach, S.S.P. Parkin, J.C. Slonczewski and B.D. Terris, filed March 4<sup>th</sup>, 2011, issued as patent number 8,558,332 by the United States Patent and Trademark Office, October 15<sup>th</sup>, 2013.

98. "Domain wall motion in perpendicularly magnetized wires having magnetic multilayers with engineered interfaces", S.S.P. Parkin, L. Thomas and S.-H. Yang, filed July 7, 2012, issued as patent number 8,638,601 by the United States Patent and Trademark Office, January 28<sup>th</sup>, 2014.
99. "Robotic Device for Substrate Transfer Applications", David Altknecht, Robert Erickson, Chris Lada, Stuart Parkin, and Mahesh Samant, filed December 12<sup>th</sup>, 2011, issued as patent number 8,657,352 by the United States Patent and Trademark Office, February 25<sup>th</sup>, 2014.
100. "Method and Apparatus for Substrate-Mask Alignment", David Altknecht, Robert Erickson, Chris Lada, Stuart Parkin, and Mahesh Samant, filed May 25<sup>th</sup>, 2012, issued as patent number 8,673,791 by the United States Patent and Trademark Office, March 18<sup>th</sup>, 2014.
101. "Domain wall motion in perpendicularly magnetized wires having artificial antiferromagnetically coupled multilayers with engineered interfaces", S.S.P. Parkin, L. Thomas and S.-H. Yang, ARC920120059 filed July 7, 2012, issued as patent number 8,687,415 by the United States Patent and Trademark Office, April 1st, 2014.
102. "Spin-current switched magnetic memory element suitable for circuit integration and method of fabricating the memory element", J.Z. Sun, R. Allenspach, S.S.P. Parkin, J.C. Slonczewski and B.D. Terris, filed September 4, 2013, issued as patent number 8,860,105 by the United States Patent and Trademark Office, October 14<sup>th</sup>, 2014.
103. "Spin-current switchable magnetic memory element and method of fabricating the memory element", J.Z. Sun, and S.S.P. Parkin, issued as patent number 8,861,262 by the United States Patent and Trademark Office, October 14<sup>th</sup>, 2014.
104. "Field effect transistor having phase transition material incorporated into one or more components for reduced leakage current", Kota V. R. M. Murali, Edward J. Nowak, Stuart P. Parkin, filed Oct 22, 2012, issued as patent number 8,896,035 by the United States Patent and Trademark Office, November 25, 2014.
105. "Robotic Device for Substrate Transfer Applications", Chris Lada, Stuart Parkin, and Mahesh Samant, filed December 21<sup>st</sup>, 2011, issued as patent number 8,936,293 by the United States Patent and Trademark Office, January 20<sup>th</sup>, 2015.
106. "Underlayers for textured films of Heusler Compounds", S.S.P. Parkin, J. Jeong and M. Samant, filed January 2015, issued as patent number 9,406,365 by the United States Patent and Trademark Office, August 2<sup>nd</sup>, 2016.
107. "Domain wall injector device using fringing fields aided by spin transfer torque", Stuart S.P. Parkin, Timothy Phung and Aakash Pushp, filed August 21, 2014, issued as patent number 9,583,212 by the United States Patent and Trademark Office, February 28<sup>th</sup>, 2017.
108. "Controlling the conductivity of an oxide by applying voltage pulses to an ionic liquid", S.S.P. Parkin and M. Samant, filed March 16<sup>th</sup>, 2013, issued as patent number 9,590,176 by the United States Patent and Trademark Office, March 7<sup>th</sup>, 2017.
109. "Termination layer-compensated tunneling magnetoresistance in ferrimagnetic Heusler compounds with high perpendicular magnetic anisotropy", Sergey V. Faleev, Jaewoo Jeong, Stuart S.P. Parkin, Mahesh G. Samant, issued as patent number 9,666,215 by the United States Patent and Trademark Office, May 30<sup>th</sup>, 2017.
110. "Magnetic memory device and method for manufacturing the same", S.S.P. Parkin, M. Samant and Woojin Kim, filed 11-23-2016, allowed by the United States Patent and Trademark Office, May 18<sup>th</sup>, 2017.
111. "Magnetic tunnel junction switching assisted by temperature-gradient induced spin torque" Stuart S.P. Parkin, Timothy Phung and Aakash Pushp, issued as patent number 9,704,551 by the United States Patent and Trademark Office, July 11<sup>th</sup>, 2017.
112. "Magnetic memory device and method for manufacturing the same", Woojin Kim, Keewon Kim, Jaewoo Jeong, Stuart SP Parkin, Mahesh Samant, issued as patent number 9,761,793 by the United States Patent and Trademark Office, September 12<sup>th</sup>, 2017.
113. "Magnetic memory device having cobalt-iron-beryllium magnetic layers", Woojin Kim, Keewon Kim, Stuart SP Parkin, Jaewoo Jeong, Mahesh Samant, issued as patent number 9,825,217 by the United States Patent and Trademark Office, November 21, 2017.
114. "Magnetic memory devices having perpendicular magnetic tunnel junction", Woojin Kim, Joonmyoung Lee, Yong Sung Parkin and Stuart S.P. Parkin, issued as patent number 9,831,422, by the United States Patent and Trademark Office, November 28, 2017.
115. "MnN and Heusler layers in magnetic tunnel junctions, Jaewoo Jeong, Stuart S.P. Parkin and Mahesh G. Samant, issued as patent number 10,170,696, by the United States Patent and Trademark Office, January 1, 2019.
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### **Patent Applications**

"Spin transfer torque switching of a magnetic layer with volume uniaxial magnetic crystalline anisotropy", J Jeong, MG Samant, SSP Parkin, Y Ferrante - US Patent App. 16/146,728, April 2<sup>nd</sup>, 2020.

"Tunable tetragonal ferrimagnetic heusler compound with pma and high TMR", J Jeong, MG Samant, SSP Parkin, Y Ferrante - US Patent App. 16/260,024, published July 30<sup>th</sup>, 2020.

"Heusler Compounds with Non-Magnetic Spacer Layer for Formation of Synthetic Anti-Ferromagnets (SAF)", Panagiotis Charilaos Filippou, Chirag Garg, Yari Ferrante, Stuart SP Parkin, Jaewoo Jeong, Mahesh G Samant, US Patent App. 16/271,721, published August 13<sup>th</sup>, 2020.

### *Invention Disclosures Published*

1. "Near-melt Processing on High Temperature Superconducting Ceramics", E.M. Engler, V.Y. Lee and S.S.P. Parkin, (SA887-0460), Published in Research Disclosure, August 1989, number 304, Kenneth Mason Publications Ltd., England.
2. "Tailoring of Magnetic Exchange Bias by use of Multi-Layered Ferro-Antiferromagnetic Structures", S.S.P. Parkin and V.S. Speriosu, (SA887-0489), IBM Tech. Disc. Bull. **33**, 96 (1990).
3. "Temperature Stabilized Magnetic Field Sensor", S.E. Lambert, S.S.P. Parkin, and M.L. Williams, (SA888-0047), IBM Tech. Dis. Bull. **32**, 236 (1989).
4. "Large Perpendicular Magnetic Anisotropy in Co/Ru Multi-layered Structures", S.S.P. Parkin and T. Suzuki, (SA890-0450), IBM Tech. Dis. Bull. **34**, 6 (1991).
5. "Flexible Giant Magnetoresistance Sensor", revised as "Organic Materials for Thin Film Head Structures", S.S.P. Parkin, T. Suzuki and K.P. Roche, (AM8-91-0214), Jap. J. Appl. Phys. Lett. **31**, L1246-L1249 (1992).
6. "Significant improvements in NiFe film properties", M. Pinarbasi, D. Mauri, and S.S.P. Parkin, IBM Tech. Dis. Bull. **41**, 416 (1998).

### *Research Contracts at IBM Research - Almaden*

1. "Investigation of The Epitaxial Growth and Characterization of High-Perfection Magnetic Thin Films", R.F.C. Farrow and S.S.P. Parkin (principal investigators), Office of Naval Research, Washington D.C., August 1, 1987 to January 31, 1990 (contract # N00014-87-C-0339).
2. "MBE Growth and Spin-Polarized Photoelectron Diffraction Studies of Magnetic Films and Surfaces", R.F.C. Farrow and S.S.P. Parkin, (principal investigators), Office of Naval Research, Washington D.C., February 1, 1990- December 14, 1991 (extension of contract # N00014-87-C-0339).
3. "Application of Multiple Structural and Magnetic Probes to Epitaxial Magnetic Multilayers, Alloys and Surfaces", R.F.C. Farrow and S.S.P. Parkin, (principal investigators), Office of Naval Research, Washington D.C., August 6, 1992 - June 29, 1993 (contract # N00014-92-C-0084).
4. "Structure-Property Relationships of Sputtered Magnetic Multilayers", S.S.P. Parkin (principal investigator), Office of Naval Research, Washington D.C., May 13, 1993 - May 12, 1994 (contract #N00014-93-C-0015).
5. "Spin Engineered Magnetic Nanostructures", S.S.P. Parkin (principal investigator), Office of Naval Research, Washington D.C., May 13, 1994 - December 31, 1996.



6. "Exchange Coupling and GMR in Magnetic Multilayers", NATO Collaborative Research Grants Programme, (grant# CRG950800), Prof. J. Mathon, City University, London and S.S.P. Parkin, IBM Almaden Research Center.
7. "Funding for Support of the 1st Gordon Research Conference on Magnetic Nano-Structures", S.S.P. Parkin, Chairman, Granted to the Gordon Research Conference, Office of Naval Research, Grant # N00014-95-1-1238, August 1, 1995 - July 31, 1996.
8. "Advanced Magnetic Random Access Memory", S.S.P. Parkin (IBM Almaden Research Center), W.J. Gallagher (IBM T.J. Watson Research Center) and R. Scheuerlein (IBM Microelectronics Division), (co-principal investigators), Defense Advanced Research Projects Agency (DARPA), U.S. Department of Defense, Arlington, Virginia, September 6, 1996 -September 5, 1999 (\$9.24 million).
9. "Fundamental Limits to Small Scale Magnetoresistive Memory and Sensors" P. Levy, New York University, S.S.P. Parkin, IBM Almaden Research Center, B. Sinkovic, A.D. Kent and S. Zhang, New York University and S.Y. Chou, University of Minnesota, co-investigators, U.S. Department of Defense Multidisciplinary Research Program of the University Research Initiative, July 31, 1996- July 30, 1999 (\$2.4 million) and extension to November 2001.
10. Expansion of "Advanced Magnetic Random Access Memory", S.S.P. Parkin (IBM Almaden Research Center), W.J. Gallagher (IBM T.J. Watson Research Center) and R. Scheuerlein (IBM Microelectronics Division), (co-principal investigators), Defense Advanced Research Projects Agency (DARPA), U.S. Department of Defense, Arlington, Virginia, September 6, 1997 -September 5, 1999 (\$1.31 million).
11. "High Density, High Speed, Nonvolatile Magnetic Random Access Memory", S.S.P. Parkin and R. Scheuerlein (IBM Almaden Research Center) and W.J. Gallagher (IBM T.J. Watson Research Center), (co-principal investigators), Defense Advanced Research Projects Agency (DARPA), U.S. Department of Defense, Arlington, Virginia, June 1, 1999 –December 31, 2000 (\$8.88 million) and extension to December 31, 2001.
12. "Ferromagnetic Metal-based Spin Injectors for Injection and Detection of Spin-Polarized current in semiconductors", S.S.P. Parkin (IBM Almaden Research Center), principal investigator, Defense Advanced Research Projects Agency (DARPA), U.S. Department of Defense, Arlington, Virginia, July 1, 2001 – December 31, 2003 (\$2.3 million).
13. Addendum to "Ferromagnetic Metal-based Spin Injectors for Injection and Detection of Spin-Polarized current in semiconductors", for the design of an advanced multi-chamber deposition system (\$500,000), S.S.P. Parkin, principal investigator, Defense Advanced Research Projects Agency (DARPA), U.S. Department of Defense, Arlington, Virginia, June 2002.
14. NEDO International Joint Research Program on "Nanoscale control of magnetoelectronics for device applications" with Junichiro Inoue, Nagoya University, Japan (coordinator); Gerrit Bauer, Delft University of Technology, Netherlands; Paul Kelly, University of Twente, Netherlands; Aren BRATAAS, Norwegian University of Science and Technology, Norway; Koichiro Inomata, Tohoku University, Japan; Laurens Molenkamp, Universitaet Würzburg, Germany; Bart van Wees, University of Groningen, Netherlands, June 2001-June 2004.
15. National Science Foundation (NSF) Nanotechnology Interdisciplinary Research Team (NIRT): "Epitaxial magnetic oxide structures for nanoscale spin devices", co-principal investigators, Chang-Beom Eom (University of Wisconsin), Venkat Chandrasekhar (Dept. Physics, Northwestern University), Xiaoqing Pan (Dept. Mat. Sci. and Eng., University of Michigan), Mark Rzechowski (Dept. Physics, University of Wisconsin), Daniel van der Weide (Dept. Electrical Engineering, University of Wisconsin) and S.S.P. Parkin (IBM Almaden Research Center) (\$1.55 million), October 2002- September 2006.
16. National Science Foundation (NSF) GOALIE (Grant Opportunities for Academic Liaison with Industry): "NanoEngineering of Magnetic Interfaces for SpinElectronics", co-principal investigators, Boris Sinkovic (University of Connecticut) and S.S.P. Parkin (IBM Almaden Research Center), summer 2003.
17. Center for Nanoscience Innovations for Defense sub-contract for work on Tunnel Spin Injectors (\$500,000), S.S.P. Parkin, Principle Investigator, February 2005.
18. Center for Nanoscience Innovations for Defense sub-contract for work on Advanced MRAM (\$500,000), W.J. Gallagher and S.S.P. Parkin, Principle Investigators, February 2005.
19. Defense Microelectronics Activity (DMEA) administered award to the University of California, Riverside, for work on Spintronics, sub-contract to IBM Almaden Research Center, S.S.P. Parkin, Principle Investigator, for work on the magnetic racetrack memory and MRAM, value \$4,000,003, for the period June 29, 2005-September 2006.
20. Defense Microelectronics Activity (DMEA) administered award to the University of California, Riverside, for work on Spintronics, sub-contract to IBM Almaden Research Center, S.S.P. Parkin, Principle Investigator, for

- work on the magnetic racetrack memory and MRAM, value \$3,300,000, for the period October 1 2006 – September 30, 2007.
21. Defense Microelectronics Activity (DMEA) administered award to the University of California, Riverside, for work on Spintronics, sub-contract to IBM T.J. Watson Research Center, W.J. Gallagher and S.S.P. Parkin, Principle Investigators, for work on MRAM, value \$1,000,000, for the period October 1, 2007 – September 30, 2008.
  22. Joint Development Alliance with TDK on spin-torque MRAM, value ~\$26,000,000, including award to IBM Almaden Research Center, S.S.P. Parkin, Principle Investigator, for development of novel magnetic tunnel junction materials and device physics, \$1,000,000 per year for 4 years, July 2007-June 2011.
  23. Joint Development Alliance with ITRI, Hsinchu, Taiwan to develop Racetrack Memory, S.S.P. Parkin, Principle Investigator, \$1,000,000 per year for 3 years, plus 2 or 3 visiting scientists from ITRI based at the IBM Almaden Research Center and the IBM T.J. Watson Research Center, November 2009-October 2012.
  24. Defense Microelectronics Activity (DMEA) administered award to the University of California, Riverside, for work on Spintronics, sub-contract to IBM T.J. Watson Research Center, W.J. Gallagher and S.S.P. Parkin, Principle Investigators, for work on Spin Torque switching of magnetic tunnel junctions, value \$375,000, for the period October 30, 2009 – September 30, 2010.
  25. Co-PI, ARO (Army Research Office) Funded MURI (Multidisciplinary University Research Institute) on “Emergent Phenomena at Mott Interfaces”, 2009-2014.
  26. Defense Microelectronics Activity (DMEA) administered award to the University of California, Riverside, for work on Spintronics, sub-contract to IBM Almaden Research Center, S.S.P. Parkin, Principle Investigator, for work on electric field switching of magnetization, value \$275,000, for the period March 1, 2011 – September 30, 2012.
  27. DARPA award to the University of Notre-Dame (prime, Wolfgang Porod, Principle Investigator), University of California, Berkeley and IBM Almaden Research Center, for development of “Nanomagnetic Logic (NML)”; S.S.P. Parkin, Principle investigator, IBM Almaden Research Center, for work on materials and device physics, sub contract value \$2,000,000, for the period November 1, 2010 –March 30, 2015.
  28. DARPA Award entitled “Novel Architecture for Topotronics-Based Information Processing” to Stanford University (prime, Shoucheng Zhang, Principle Investigator), University of IBM Almaden Research Center, UC Los Angeles, UC San Diego, and Univ. of Wuerzburg; S.S.P. Parkin, Principle investigator, IBM Almaden Research Center, sub-contract value \$1,200,000, for the period May 1, 2011 –April 30, 2015.
  29. Army Research Office Award for “Racetrack Memory: a dynamically reconfigurable, low power memory-storage device”, \$1,000,000, April 25, 2013 – April 2015.

News coverage of research papers and work (sampling only)

- Paper, "Giant Magnetoresistance in Antiferromagnetic Co/Cu Multilayers", by S.S.P. Parkin, Z.G. Li and D.J. Smith, Appl. Phys. Lett. **58**, 2710 (1991), principle subject of an article by M. Salamon entitled, "A new magnetic turn-on", in the News and Views section of Nature, **353**, 305 (1991).
- Work on giant magnetoresistance in magnetic multilayers highlighted in article by P. Levy in "Physics News in 1991", (published by American Institute of Physics), page 40, 1992.
- Work on giant magnetoresistance and oscillatory coupling subject of article based on extended interview in Science Watch, October 1992, page 3.
- Photograph included in IBM Annual Stockholder’s report, April 1998.
- Work on Magnetic Random Access Memory (MRAM) highlighted in article entitled “A Milestone on the Road to Ultrafast Computers” by John Markoff, New York Times newspaper, April 6, 1999 and also mentioned in articles in Scientific American, May 1999 and Science News, April 3, 1999 [vol. 155, page 223].
- Feature article in The Korean Herald, May 18, 1999 entitled “Research into magnetic multilayers coming of age” with excerpts from my paper presented at Intermag’99, Kyongju, Korea, May 21, 1999.
- Interviewed on San Francisco Bay Area Channel 4 television program, “New Media News”, May 1999.
- Photograph and work highlighted in article “Giant magnetoresistance devices move in”, The Industrial Physicist magazine, page 22, June 1999.
- Photograph on front cover of R&D (Research and development) magazine and work highlighted in article “Will spintronics replace conventional electronics”, page 14, July 1999.
- Work on MRAM highlighted in Nikkei Electronics, vol. 757, page 49, November 15, 1999.

- Myself and work subject of feature article entitled “Instant Access Memory”, Wired Magazine, pages 172-178, April 2000<sup>3</sup>.
- Work on MRAM subject of article, “Computing’s new lodestone”, The Economist, page 81, March 18, 2000.
- Work on MRAM subject of article “Forerunner US makers leave the rest far behind in development of new MRAM memories”, Nikkei Electronics, vol. 766, page 63, March 27, 2000.
- Work on MRAM subject of article “Memories are forever”, MIT Technology Review, May-June 2000.
- Quoted in article on MRAM in Libération, May 12, 2000.
- Quoted in article on MRAM in Electrical Engineering Times, May 12, 2000.
- Work on MRAM subject of article in Philadelphia Enquirer, August 13, 2000.
- Quoted in article on MRAM in MIT Technology Review, December 2000.
- Extensive media coverage of announcement by IBM and Infineon of the establishment of a joint development program to develop an MRAM chip, with materials based on my work, ready for production in 2004: stories in Wall Street Journal, NY Times, Bloomberg News, Reuters US, Reuters Germany, Financial Times, CNET, ZDNET, San Francisco Chronicle, IDG Newswire, InfoWorld, Electronics Buyers News, the Globe and Mail in Canada and others, December 7, 2000.
- Article about MRAM and myself by John Dvorak, PC Magazine, January 15, 2001.
- Articles about myself (“*Magnetic Gold*”) and MRAM in Jornal do Brasil, January 17, 2001.
- Story about my work on MRAM in Electronic News, “*Building a better memory: Non-volatile MRAM technology, if it lives up to its hype, could be a hot, new competitor in the memory market*”, February 2001.
- Interviewed by Deutschland Radio Köln (Deutschlandfunk), at American Physical Society Meeting, Seattle, and broadcast in daily science program "Forschung Aktuell", 4:35pm, March 31, 2001; Interview also broadcast on "Westdeutscher Rundfunk", German Public Radio.
- Story and photo in Hong Kong Economic Times about a talk I gave on MRAM during a visit to Hong Kong, April 18, 2001.
- Photograph of myself included in IBM Annual Stockholder’s report, April 2001.
- Photograph of myself included in article by Kenneth Chang in New York Times entitled “*‘Spin’ could be quantum boost for computers*”, August 21, 2001. Article reprinted under title “*Spin could turbocharge computing*” in Taipei Times, August 22, 2001.
- Mentioned in article “*Eureka! IBM Develops Labs with Profits*”, New York Times, September 9, 2001.
- Story on KLIV Radio station about myself and my winning the R&D Magazine 2001 Innovator of the Year Award, October 26, 2001.
- Story about myself entitled “*Restless Researcher: IBM scientist Stuart Parkin is too busy researching new technologies to revel in past accomplishments*”, in the “Turning Point” feature in Silicon Valley Business Ink, November 9, 2001.
- Featured in BBC World program “clickonline”, November 2001.
- Included in the Institute of Scientific Information’s new data base on the world’s most highly cited researchers (<http://www.isihighlycited.com>), November 2001.
- Article about myself and the GMR magnetic recording read head entitled “*The art of the quantum leap*” in The Technology Quarterly, The Economist Magazine, December 6, 2001.
- Quoted in article “*Future Tech: Computing with a Twist: engineers begin to tap into the power of electron spin*” by Neil Savage, Discover Magazine, vol 23.1, January 2002.
- Subject of article in San Jose Mercury News – Sunday Edition, Portfolio Column, March 10, 2002.
- MRAM work of IBM-Infineon alliance receives extensive publicity (New York Times, Reuters, EETimes, Infoworld, and many others) related to our announcement of the development of 0.18 micron CMOS 128kbit prototype MRAM at the VLSI conference, Kyoto, Japan, June 10, 2003.
- Interviewed by Tom Feilden of BBC Radio 4 following my talk on Nanotechnology – a perspective at the London Centre of Technology Showcase Event, January 14, 2004.
- Quoted in article in Washington Post on Nanotechnology, February 22, 2004.
- My photograph and quote in article in New York Times by Barnaby Feder about the formation of the IBM-Stanford Spintronic Science and Applications Center of which I am the Director, April 26, 2004.
- Extensive media coverage worldwide of the announcement of the formation of the IBM-Stanford Spintronic Science and Applications Center on April 26, 2004 including articles in the New York Times: “IBM Joins Stanford to Find Uses for Electron Spin”; San Francisco Chronicle: “Stanford, IBM team to explore 'spintronics'”; the San Jose Mercury News: “Research takes new spin on Moore's Law”; EETimes “IBM,

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<sup>3</sup> Sub-titled "He's already set off one computer storage revolution. Now Stuart Parkin is reengineering RAM so we'll never have to boot up again."

Stanford join forces on spintronics”; Wired News; PCWord.com; Information Week; Internet news; C/Net/ZDNet; ExtremeTech; PC Pro (UK); Xinhua (China): ” IBM, Stanford University join hands on nanotechnology research”; Inquirer; Geek.com; TechNewsWorld; Heise Online (Germany); VNUNet (France). Plus reports broadcast on television including KGO-TV (San Francisco), KNTV (San Jose) and KQED (San Francisco).

- Interviewed on KQED morning news, the largest public radio station in the Bay Area, April 27, 2004.
- Quoted in nine publications in Korea, including Digital Times, Yonhap Newswire, 4 economic dailies, leading online inews24.com, after my presentation on “Global Innovation at IBM” at the International Symposium on Promoting Regional Innovation, Seoul, Korea, July 8, 2004.
- Story and photograph about my work on spintronics in Il Sole – 24 Ore, Italian national newspaper on technology and science, September 4, 2004.
- Story and photograph about myself and futuristic possibilities of MRAM in USA Today based on interview with me by Kevin Maney at IBM Almaden, September 8, 2004.
- Story and photograph about myself and Albert Fert and our respective research, based on interviews with Ignacio Fernandez Bayo at a School of Physics in Miraflores, near Madrid, published in Spain’s most important newspaper, El Pais, October 6, 2004.
- Paper in Nature Materials (Parkin *et al.*, 3 862 (2004)) on giant tunneling magnetoresistance in MgO based magnetic tunnel junctions receives significant press coverage including commentaries in Nature Materials (“*Magnetic Memory: a signal boost is in order*”, by Bill Butler and Arunava Gupta, December 2004), Physics Today (“*Magnetoresistive Tunnel Junctions Look Ever More Promising for Magnetic Random Access Memory*” by Barbara Gross Levi, December, 2004) and Science News (“*Magnetic Bit Boost: Quantum rewiring for computer memories*” by Peter Weiss, December 18, 2004).
- Lengthy article entitled “IBM’s new concept memory offers the performance of DRAM at the price of HDD” in Nikkei Electronics about my magnetic racetrack storage concept, March 14, 2005. Shorter articles also published on line at the main Nikkeibp.com web site as well as the Nikkei Electronics site earlier in March.
- Article in Fortune Magazine entitled “Heroes of Industry”, highlighting myself and my work. The article is about “three men (who) personify the passion and smarts that drive the economy”, March 21, 2005.
- Highlighted in article about the IBM Almaden Research Center entitled “IBM Plots the future at tech summer camp” by Karlin Lillington, Irish Times, July 29, 2005.
- Article in ComputerWorld, Norway, entitled “Creates super memory with nanotechnology: IBM scientist Stuart Parkin is developing storage technology which combines the capacity of the hard disk with the speed of internal memory and the stability of Flash memory”, by Arne Søiland, August 8, 2005 (includes pictures of myself and my laboratory).
- Article entitled “IBM scientist uses nanotech to create super memory” published in German business magazine “CIO”, August 16, 2005.
- Extensive article in Popular Mechanics entitled “Cerco del Valle del Silicio” (Close to Silicon Valley: Almaden, An IBM R&D Center, is a hotbed for the technologies that will prevail in coming years”) with two photographs of me in my laboratory and report on our work in spintronics, October 2005.
- Interviewed in Science Times in article by Peter Weiss on magnetic race track memory, November 2005.
- My photograph and discussion of MRAM in article by T.W. Min in a large national newspaper in Korea, Kookmin Ilbo, November 21, 2005.
- Myself and my racetrack memory concept focus of story in EETimes “Zen of Disruption” entitled “Putting a new spin on storage”, November 28, 2005.
- APL article on temperature independence of spin polarization of current injected into GaAs chosen as Editor’s Choice: Highlights of the recent literature, Science Magazine, 20 307 (2006).
- Article in Telepolis entitled “Die Mauer muss weg”, on our paper in Science on the resonant amplification of domain wall motion, March 16, 2007.
- EETimes article entitled “IBM uses ‘racetrack’ to advance memory storage”, April 11, 2007.
- Work on racetrack focus of article in the Economist, May 2007.
- Article on Racetrack Memory in the French journal L’usine Nouvelle, August 4, 2007.
- Feature article on myself and the Racetrack Memory on the front page of the business section of the New York Times Newspaper, September 11<sup>th</sup>, 2007 (including 2 photographs and a graphic) entitled “Redefining the Architecture of Memory: Breakthrough Technology Could Increase Data Storage by a Hundredfold”
- Article in the International Herald Tribune (page 13) on September 11<sup>th</sup>, 2007 entitled “Retooling the basis of computing: IBM Physicist aims to expand data storage by a hundredfold” and a related article entitled “Act 2 for an IBM scientist” by John Markoff published in the New York Times (Business section)

[<http://www.nytimes.com/2007/09/10/business/worldbusiness/10iht-storage.4.7451892.html>] and IHT.com on September 10, 2007.

- Interviewed live on KCBS radio station about the racetrack, September 12, 2007.
- Article in MIT Technology Review about Racetrack entitled “IBM Attempts to Reinvent Memory”, October 4, 2007.
- Interviewed about racetrack for a weekly science radio program “Are we alone?”, produced by SETI Institute, October, 2007.
- Two page article in Nikkei Electronics about our latest developments in Racetrack Memory, -- News: "Even so, it is low in cost than NAND"; IBM's new magnetic memory evolves”, Nov. 5, 2007.
- Bloomberg (April 10, 2008); IBM Storage Breakthrough May Lead to Faster, Cheaper Memory
- CNET (April 11, 2008) CNET News: IBM's racetrack memory – photo slide show.
- CNET (April 10, 2008) CNET News Blog: IBM's racetrack memory seeks 100x boost in density.
- BBC News (April 10, 2008) BBC News: IBM races to make hi-tech memory.
- Semiconductor International (April 10, 2008): Racetrack runs circles around flash.
- New Scientist (April 10, 2008): New Scientist: IBM creates working racetrack memory device.
- Daily Telegraph (April 10, 2008): Scientists unveil revolutionary 'racetrack' computer memory.
- Science Magazine (April 11, 2008): Science magazine: News of the Week: At Mixed Odds, Racetrack Memory Charges From Gate by Adrian Cho.
- EE Times (April 11, 2008): IBM uses 'racetrack' to advance memory storage.
- Times of London (April 11, 2008): IBM Chip boosts iPod, Gadget memories.
- MIT Technology Review (April 11, 2008): IBM's faster, denser memory.
- San Jose Mercury News (April 11, 2008): IBM announces storage breakthrough.
- CRN: IBM touts racetrack memory breakthrough.
- FOXNews: Memory breakthrough could mean 500,000 songs on an iPod.
- Voice of America Radio: Interview with Stuart Parkin on racetrack memory.
- InformationWeek: IBM research spins 'racetrack' nano-magnetic memory.
- eFlux Media: IBM's new breakthrough: Racetrack memory.
- BrooklynVegan (popular NYC music blog): The new chip that will let an iPod store 500,000 songs.
- National Post/Financial Post: New technology would enable iPods with 500,000 songs.
- Physorg.com: Researchers move closer to new class of memory.
- TG Daily: Spintronics at work: IBM outlines racetrack memory.
- Venture Beat: Racetrack memory: Half a million songs on your iPod and a battery that'll last for weeks.
- GigaOm: IBM's racetrack memory speeds past Moore's Law.
- ArsTechnica: Storing data in three dimensions with racetrack memory.
- BetaNews: IBM creates racetrack memory for faster and cheaper storage.
- ITWire: Racetrack memory promises storage expansion for devices.
- PC World: IBM lays claim to cheaper, faster memory.
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- Japan (Apr. 11, 2008) ITPro -- IBM announces new type of memory "racetrack memory," enables 100x boost in density (<http://itpro.nikkeibp.co.jp/article/NEWS/20080411/298730/>).
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- Japan (Apr. 11, 2008) MYCOM Journal -- IBM announces memory technology "racetrack" using spintronis technology (<http://journal.mycom.co.jp/news/2008/04/11/017/>).
- Japan (Apr. 11, 2008) Impress PC Watch -- IBM announces memory technology "racetrack," moves domain walls with current - aims at replacing HDD and flash (<http://pc.watch.impress.co.jp/docs/2008/0411/ibm.htm>).
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- Japan, Kagaku Kogyo -- IBM announces new nonvolatile memory technology; use electronic spin to store data, Apr. 14, 2008.
- Japan, Dempa -- IBM's new memory technology "racetrack," realizes large capacity, low cost, low power”, April 18, 2008.
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- Gizmag (Australia): IBM set to supercede flash with superfast, high capacity, low cost racetrack memory.

- iTNews.com (Australia): Racetrack memory to change the storage landscape within a decade.
- CIO Australia: IBM lays claim to cheaper, faster memory.
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- Calcutta Telegraph: Scientists unveil new racetrack memory.
- TREND Information (Azerbaijan): IBM uses spintronics to make memory leap.
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- Germany, Digital Living Magazine, 11-4-08, The future of mass storage.
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- Switzerland, IT Business, 11-4-08, Revolutionary Storage Technology.
- PC Pro (UK): IBM touts hard disk killer.
- Daily Mail (UK): Tinier, faster, tougher and cooler by far - the handheld players that will store 3,500 movies.
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- Silicon Republic (Ireland): IBM races ahead with memory innovation.
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- 2 page article in EuroAsia semiconductor Magazine entitled "IBM closer to new class of memory: Technology that revolutionizes capacity", with my photograph and discussion of Racetrack Memory, May 2008.
- Article in Nikkei Electronics entitled "IBM Demonstrates Ultra High-integration Memory Using Magnetic Materials Performance Rivals that of DRAM, Integration Exceeds that of NAND Flash", May 5, 2008.
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- Scientific American Online, article on Racetrack Memory, September 2008.
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  - TG Daily: “IBM Makes Another Racetrack Memory-Related Discovery”, December 24, 2010. [<http://www.tgdaily.com/hardware-features/53210-ibm-details-next-gen-racetrack-memory-specs>].
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  - ABC TV Catalyst program, a science show, hosted by Graham Phillips, Australian Broadcasting Company, Racetrack Memory story including interview with me, filmed at the IBM Almaden Research Center in November 2010, broadcast on May 19<sup>th</sup>, 2011. [<http://www.abc.net.au/catalyst/stories/3221653.htm>].
  - Extensive media coverage of invited and contributed papers at IEDM on Racetrack Memory presented on December 7, 2011, including:

- "IBM has scored a blow in the high-stakes prizefight for the title of next-generation non-volatile memory technology, revealing a prototype "racetrack memory" chip baked using the same silicon fab technologies as run-of-the-mill chipperry." -*The Register*
- "IBM is cooking up a new type of memory chip that sends bits whizzing along tiny wires, dubbed racetracks. The technology has leaped into the realm of the realistically possible with Big Blue's announcement today that it can make racetrack memory using standard chipmaking processes." -*Wired Enterprise*
- "This breakthrough could lead to a new type of data-centric computing that allows massive amounts of stored information to be accessed in less than a billionth of a second.' Here is a [video](#) I did back in 2010 at IBM's Spintronics lab that explains racetrack memory and how it relates to storing more data that can be read faster." -*GigaOm*
- BBC News: "IBM scientists unveil Racetrack memory chip prototype." [<http://www.bbc.co.uk/news/technology-16047098>]
- The Register: "IBM unveils high-capacity, high-speed storage chipper: 'Racetrack memory' off to the races", December 6, 2011. [[http://www.theregister.co.uk/2011/12/06/ibm\\_racetrack\\_memory/](http://www.theregister.co.uk/2011/12/06/ibm_racetrack_memory/)]
- Wall Street Journal: "IBM Talks Up Three Paths Toward New Chips", December 5, 2011. [<http://blogs.wsj.com/digits/2011/12/05/ibm-talks-up-three-paths-toward-new-chips/>].
- Technology Review (MIT): "IBM Makes Revolutionary Racetrack Memory Using Existing Tools: Racetrack memory could someday supersede flash in terms of density and cost", December 5, 2011. [<http://www.technologyreview.com/computing/39239/page1/>].
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- EE Times: Rick Merritt, "Inside IBM's superconductor lab" [<http://www.eetimes.com/electronics-news/4398972/Slideshow--Inside-IBM-s-superconductor-lab>], October 30th, 2012.
- Extensive media coverage of paper published in Science entitled "Suppression of Metal-Insulator Transition in VO<sub>2</sub> by Electric Field-Induced Oxygen Vacancy Formation", including:
  - New York Times: John Markoff, "I.B.M. Research Points to Circuits That Mimic the Brain's Design" [<http://bits.blogs.nytimes.com/2013/03/21/i-b-m-research-points-to-circuits-that-mimic-the-brains-design/>], March 21, 2013.
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  - EXTREMETECH: "IBM takes a step towards building artificial semiconductor synapses", by Joel Hruska, March 27, 2013.
  - The Motley Fool: "IBM Takes Another Step Towards a Post-Human World", By Alex Planes, March 26, 2013. [<http://www.fool.com/investing/general/2013/03/26/ibm-takes-another-step-toward-a-post-human-world.aspx>].
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- IEEE Spectrum: “A Next-Gen Transistor Material Loses Its Luster: Vanadium dioxide might just make the ultimate transistor material—but physicists know less about how it works than they once thought.” [<http://spectrum.ieee.org/semiconductors/materials/a-nextgen-transistor-material-loses-its-luster>] by Rachel Courtland, May 21, 2013.
- News articles about our Nature Physics paper on “*Control of the metal-insulator transition in vanadium dioxide by modifying orbital occupancy*”:
  - SLAC news feature: [<http://www6.slac.stanford.edu/news/2013-10-21-IBM-SLAC-Team-Controls-Switching-Behavior-Promising-Electronic-Material.aspx>]
  - Stanford College of Engineering version: [<http://engineering.stanford.edu/news/ibmslac-team-controls-switching-behavior-promising-electronic-material>]

### Student Awards

- Xin Jiang, one of my Ph.D. students from Stanford University (Applied Physics), wins American Physical Society Topical Group in Magnetism Outstanding Dissertation Award in Magnetism, presented at the APS March Meeting, Montreal, Canada, March 2004.
- Ngoc-Anh Vu, a student from the Ecole polytechnique, Paris, who carried out a four-month internship in my group during the summer of 2004, wins a prestigious award for this work from the Ecole polytechnique - the Prix de la Fondation, pour le meilleur travail réalisé à l'étranger dont les résultats peuvent profiter aux entreprises. November 2005.
- Christian Kaiser, one of my Ph.D. students from RWTH Aachen, receives Honorable Mention in the GMAG Outstanding Dissertation in Magnetism awards for 2005, presented at GMAG Business Meeting, APS March Meeting, Los Angeles, California, March 2005.
- Christian Kaiser receives Ph.D. *summa cum laude* from RWTH Aachen, December 21, 2004.
- Hyunsoo Yang, one of my Ph.d. students from Stanford University (EE), awarded a GMAG Outstanding Dissertation Award in Magnetism (American Physical Society Topical Group in Magnetism), to be presented at the American Physical Society March Meeting, Baltimore, March 2006 (award consists of an invited talk at the meeting, \$500 prize and \$250 travel support).
- Hyunsoo Yang and Masamitsu Hayashi, two of my Ph.D. students from Stanford University selected as two of five finalists for the Best Student Presentation Award, 50<sup>th</sup> Conference on Magnetism and Magnetic Materials, San Jose, California, October 30- November 3, 2005.
- Bérengère Lebental, a student from the Ecole polytechnique, Paris, France wins a prize - Prix D option de physique – for her report on a 4-month internship in my group during the summer 2006.
- Li Gao, Finalist for Best Student Presentation Award, 53<sup>rd</sup> Conference on Magnetism and Magnetic Materials (MMM 2008), Austin, Texas, November 11-14<sup>th</sup>, 2008.
- Li Gao, one of my SpinAps Ph.D. students, Winner, GMAG Outstanding Ph.D. Dissertation in Magnetism Award, to be presented at the American Physical Society (APS) March Meeting, Pittsburgh, Pennsylvania, March 16-20, 2009.
- Rémi Morilleau, École Polytechnique, awarded “Le Grand Prix du stage de recherche X2007”, for work carried out during his internship in my group, November 2010.
- Benjamin Madon, École Polytechnique, awarded Le Grand Prix d’Option “Grand prix du stage de recherche” for work carried out during his internship in my group, October 2013.
- Jérôme Michon, École Polytechnique, awarded “Félicitations du jury” for work carried out during his internship in my group, October 2014.

### Post-doctoral visiting scientist, IBM Research - Almaden

1. Dr. Rajendra Bhadra, Illinois Institute of Technology, 1990-1991.
2. Dr. Harry Lam, University of California, Berkeley, November 20, 1991-August 11, 1992 (currently, senior engineer, IBM Storage Systems Division, San Jose, California).

3. Dr. Gerry Harp, University of Wisconsin, June 1993 - May 31, 1994 (currently, Assistant Professor, Ohio University, Athens, Ohio).
4. Dr. Xiaoping Bian, McGill University, Canada, December 19, 1994 - January 21, 1996 (currently, senior engineer, IBM Storage Systems Division, San Jose, California).
5. Dr. Arley Marley, University of Illinois, July 23, 1995- July 11, 1997 (currently, senior engineer, IBM Storage Systems Division, San Jose, California).
6. Dr. Savas Gider, University of California, Santa Barbara, March 4, 1996- November 28, 1997 (currently, senior engineer, IBM Storage Systems Division, San Jose, California).
7. Dr. Kevin Pettit, University of Illinois, July 8, 1996 – July 31, 1997 (from August 1997, Assistant Professor, Carleton College, Northfield, Minnesota).
8. Dr. Ki-Seok Moon, Korean Advanced Institute of Science and Technology, Seoul, Korea, September 16, 1996- March 27, 1998.
9. Dr. Bernd-Uwe Runge, Universität Konstanz, Germany, Feodor Lynen fellowship, Humboldt Foundation, March 1, 1997- February 28, 1998.
10. Dr. Ningjia Zhu, McGill University, Montreal, Canada, February 7, 1997 – December 12, 1997 (currently engineer, Read-Write Corporation, Hayward, California).
11. Dr. Douwe Monsma, University of Twente and MESA Research Institute, The Netherlands, March 30, 1998- March 30, 2001.
12. Dr. Luc Thomas, Laboratoire de Magnétisme Louis Néel, CNRS, May 1, 1998- December 20, 1999.
13. Dr. Stéphane David, Laboratoire de Magnétisme Louis Néel, CNRS, December 6, 1999-March 30, 2001.
14. Dr. Sebastiaan van Dijken, University of Twente, The Netherlands, October 2, 2000- July 3, 2002.
15. Dr. Maxim Tsoi, University of Grenoble, France, September 17, 2001- September 16, 2002.
16. Dr. Andreas Ney, Paul Drude Institute, Berlin, Germany, October 2003- present, Feodor Lynen Fellowship, Alexander von Humboldt Foundation, May 1, 2004- April 30, 2005.
17. Dr. Rai Moriya, Tokyo Institute of Technology, June 1, 2004- June 30, 2007.
18. Dr. Teruo Kenki, University of Osaka, Japan, Japan Society for the Promotion of Science Fellowship, June 1, 2004- May 30, 2006.
19. Dr. Nicolas Weiss, EPFL, Lausanne, France, Scholarship from the Swiss Science Foundation, March 2005 – March 2007.
20. Dr. Hyunsoo Yang, Stanford University, April 2006 – July 2007.
21. Dr. Masamitsu Hayashi, Stanford University, April 2007 - August 23, 2008.
22. Dr. Ruisheng Lui, Lund University, Sweden, January 16, 2009-September 30, 2011.
23. Dr. Kwang-Su Ryu, KAIST, September, 2009- September 2014.
24. Dr. Aakash Pushp, Princeton University, January 11, 2010-.
25. Dr. Jae-Woo Jeong, KAIST, Daejeon, Korea, September 8, 2010-.
26. Dr. Rong Shan, University of Mainz, Germany, November 1, 2010-July 2012.
27. Dr. Tommy Schladt, [Feodor Lynen Research Fellowship Awarded by the Humboldt Foundation, March 14, 2011], University of Mainz, Germany, February 2011- August 2012.
28. Dr. Tanja Graf, University of Mainz, Germany, February 2011 – August 2012.
29. Dr. Wei Han, University of California, Riverside, February 2012 – October 2015.
30. Dr. Koen Martens, KULeuven/IMEC, February 2012 – September 2012.
31. Dr. Pengfa Xu, MPI- Dresden, March 2012 -.
32. Dr. Ivan Knez, Rice University, April 2012 – April 2014.
33. Dr. Yannick Dusch [J. William Fulbright Foreign Scholarship], LEMAC-IEMN UMR CNRS, Villeneuve d'Ascq Cedex, France, October 2012 – October 2013.
34. Dr. Sergey Faleev, February 4, 2013 – December 2, 2016.
35. Dr. Amir Capua, Technion University, Israel, September 30, 2013 – September 2016.

#### Visiting Scientists – IBM Research - Almaden

- Prof. George Mathon, City University, London, United Kingdom, May/June, 1995 and July/August 1996.
- Prof. Flavio M. de Aguiar, Departamento de Física, Univ. Fed. Pernambuco, Recife, Brasil, June 21, 1995- September 20, 1995.
- Dr. Wolfgang Kuch, Max-Planck-Institut für Mikrostrukturphysik, Halle, Germany, February 1 - July 30, 1996 and January 1997.
- Prof. Dr. Gernot Guntherodt, RWTH Aachen, sabbatical, summer/ winter 2005.
- Prof. Maxim Tsoi, University of Texas, Austin, Summer 2006.
- Prof. Claudia Felser, University of Mainz, Germany, January – September 2010.

- Prof. Manuel Vazquez, Instituto de Ciencia de Materiales de Madrid, Madrid, Spain, March 2011.
- Prof. Grace Lin, National Taiwan University, Taipei, Taiwan, September – December 2011 and January – February 2013.
- Prof. Chao-Ming Fu, National Taiwan University, January- March 2012.
- Dr. Carlos Boubeta, Universitat de Barcelona, Spain, Summer 2013.
- Prof. Teho Wu, National Yunlin University of Science and Technology, sabbatical, March – September 2013.

#### Visiting Students, IBM Research - Almaden

- Noa More, Stanford University, March- September 1989.
- Sewan Fan, San Jose State University, 1988-1989.
- Kevin Pettit, University of Illinois, March-May 1995 and September/October 1995.
- Anelia Delcheva, Clark University, summer 2000 (IBM/APS Research Internship for Undergraduate Women).
- Christian Kaiser, Diploma thesis student, RWTH-Aachen, January -December 2001.
- Olaf M.J. van't Erve, Ph.D. student, University of Twente, The Netherlands, January- March 2001.
- Doug King, Ph.D. student, Stanford University, June 2001-.
- Sarah Blair, undergraduate student, Coe College, summer 2001.
- Tiffany Santos, undergraduate student MIT, summer 2001.
- Roger Wang, Ph.D. student, Stanford University, summer 2002, 2003 and 2004.
- Sarah Blair, undergraduate student, Coe College, summer 2002.
- Kiran Thadani, undergraduate student, Univ. Pennsylvania, summer 2002.
- Jorgen Kool, undergraduate student, University of Groningen, November 2003 – March 2004.
- Ngoc-Anh Vu, undergraduate student, Ecole Polytechnique, Paris, France, May –September 2004.
- Ekua Anane-Fenin, undergraduate student, Bryn Mawr, Pennsylvania, summer 2004.
- Andrew Duffin, undergraduate student, University of Utah, Salt Lake City, summer 2004.
- Ekua Anane-Fenin, undergraduate student, Caltec, California, summer 2005.
- Anh Duc Dao, undergraduate student, Ecole Polytechnique, Paris, France, April –October 2005.
- Berengere Lebenthal, undergraduate student, Ecole Polytechnique, Paris, France, April –September 2006.
- Sergej Mutas, Diploma thesis student, Universität Würzburg, September- December 2006.
- Shwetank Kumar, Ph.D. Graduate Student, Applied Physics, California Institute of Technology, Summer 2007.
- Sayeef Salahuddin, Ph.D. Graduate Student, School of Electrical and Computer Engineering, Purdue University, Summer 2007.
- Roberto Rodio, undergraduate student, Politecnico di Torino, Italy, February- August 2008.
- Samar Singal, undergraduate student, IIT Delhi, India, May- July 2008.
- Nasim Eibagi, University of California, Davis, (IBM/APS Research Internship for Undergraduate Women), June -August 2008.
- Kostas Alexandrou, Undergraduate Internship, Politecnico di Torino-Grenoble INPG-EPFL, Italy, February – August 2010.
- Remi Morilleau, Undergraduate Internship, Ecole Polytechnique, France, May - August 2010.
- Ming-Yuan (Griff) Song, Ph.D. Student, National Taiwan University, PhD student, February 2011- February 2013.
- Marc Drouard, Undergraduate Internship, Politecnico di Torino, the Grenoble Institute of technology and the EPFL, February - August 2011.
- Andrea Fantini, Undergraduate Internship, Politecnico di Torino, February –August 2011.
- Paul Chevalier, Undergraduate Internship, Ecole Polytechnique, April - July 2011.
- Sarah Schlotter, Undergraduate Internship, Carlton College, Northfield, MN, June - September 2011.
- Liang-Chao Chang, National Taiwan University, Ph.D. student, January 2012- December 2012.
- Yari Ferrante, Internship for Master's Degree in Micro and Nanotechnologies for Integrated Systems, Polytechnic of Turin, Institute National Polytechnic of Grenoble (INPG) and Ecole Polytechnique Fédérale de Lausanne (EPFL), March 6- September 4, 2012.
- Matteo Cossale, Internship for Master's Degree in Micro and Nanotechnologies for Integrated Systems, Polytechnic of Turin, Institute National Polytechnic of Grenoble (INPG) and Ecole Polytechnique Fédérale de Lausanne (EPFL), March 6- September 4, 2012.
- Debayan Mitra, Undergraduate Internship, Ecole Polytechnique, Paris, France, 2012.
- Yonglong Xie, Undergraduate Internship, Master's Degree, Ecole Normale Supérieure, Paris, France, February 13<sup>th</sup> –August 10<sup>th</sup>, 2012.
- Salvatore Mesoraca, Graduate student, Master NANOTECH (Lausanne EPFL - Grenoble INP - Politecnico di Torino), March – September 2013.

- Panagiotis Filippou, Graduate student, Master NANOTECH (Lausanne EPFL - Grenoble INP - Politecnico di Torino), March – September 2013.
- Benjamin Madon, Student, École Polytechnique, April 8 - August 9<sup>th</sup>, 2013.
- Elisa Yang, Undergraduate Student, Bryn Mawr College, June 17 – September 7<sup>th</sup>, 2013.
- Gerben Hopman, Master's Student, University of Twente, The Netherlands, November 4, 2013 – March 3, 2014.
- Pim Reith, Master's Student, University of Twente, The Netherlands, November 4, 2013 – March 3, 2014.
- Robin Bläsing, RWTH Aachen, November 2013 – May 2014.
- Jérôme Michon, Ecole Polytechnique, Paris, April – October 2014.
- Paul Amari, ESPCI, Paris, France, August – November 2014.
- Chirag Garg, Internship, Master's degree, Indian Institute of Technology (BHU), Varanasi March-June 2014, and Ph.D. (MLU), September 2014 -.
- Kai-Uwe Demasius, Technical University Dresden, September 2014- February 2015.
- Hanna Bendjador, Ecole Supérieure de Physique et de Chimie Industrielles de la ville de Paris (ESPCI ParisTech 132ème promotion), July - December 2015.
- Cassia Naudet-Baulieu, Ecole Supérieure de Physique et de Chimie Industrielles de la ville de Paris (ESPCI), July – December 2015.
- Jie Zhang, Ph.D. Student, University of Science and Technology Beijing, China, September 2014-September 2017.

*Ph.D. Student principal advisor, IBM Research-Almaden*

1. Alex Panchula, Ph.D. student, Applied Physics, Stanford University, January 2000-November 2003. (Co-advisor, Prof. Ted Geballe); passed Ph.D. thesis examination, November 11, 2003, awarded Ph.D. degree, January 8, 2004.
2. Xin Jiang, Ph.D. student, Applied Physics, Stanford University, March 2001-March 2004, awarded Ph.D. degree, April 1, 2004. (Co-advisor, Prof. Jim Harris); wins American Physical Society Topical Group in Magnetism Outstanding Dissertation Award in Magnetism, presented at the March Meeting, Montreal, Canada, March 2004.
3. Christian Kaiser, RWTH-Aachen, August 2002-March 2005. (Co-advisor, Prof. Gernot Guntherodt), Ph.D. defense, Aachen, Germany, December 21, 2004, received *summa cum laude* grade (highest grade).
4. Roger Wang, Ph.D. student, Electrical Engineering, Stanford University, spring 2002-present. (Co-advisor, Prof. Jim Harris), passed qualifying exam, October 19, 2005, received Ph.D. degree April 6, 2006.
5. Rekha Rajaram, Ph.D. student, Materials Science and Engineering, Stanford University, March 2003-December 2006. (Co-advisor, Prof. Jim Harris), passed qualifying exam, October 17, 2006, received Ph.D., April 5, 2007.
6. Guenole Jan, Physics Department, Trinity College, Dublin, April 2003-October 2008 (Co-advisor, Prof. Mike Coey).
7. Masamitsu Hayashi, Ph.D. student, Materials Science & Engineering, Stanford University, June 2003 – present (Co-advisor, Prof. James Harris, Electrical Engineering), passed qualifying exam, July 21, 2006, received Ph.D. degree, January 16, 2007.
8. Hyunsoo Yang, Ph.D. student, Electrical Engineering, Stanford University, May 2004- present. (Co-advisor, Prof. Jim Harris), passed qualifying exam, January 9, 2006, received Ph.D. degree, April 6, 2006.
9. Li Gao, Ph.D. student, Applied Physics, Stanford University, June 2004 - October 14<sup>th</sup>, 2009. (Co-advisor, Prof. Jim Harris), received Ph.D. in Applied Physics on 9-24-2009 and M.S.E.E. in June 2007.
10. Bastiaan Bergman, University of Eindhoven, The Netherlands, January 2005 - November 6, 2009. (Co-advisor, Prof. Bert Koopmans).
11. Anjia Gu, Ph.D. student, Applied Physics, Stanford University, January 2005 - July 26, 2006 (Co-advisor, Prof. Jim Harris).
12. Cheng-Han Yang, Ph.D. Student, Materials Science and Engineering, Stanford University, June 27, 2005 – June 4, 2010. (Co-advisor, Prof. Jim Harris), passed PhD defense, March 26, 2010.
13. Justin Brockman, Ph.D. Student, Applied Physics, Stanford University, July 2006 - present (Co-advisor, Prof. Jim Harris), passed Ph.D. qualifying exam, June 2007, defended Ph.D. Stanford University, November 16<sup>th</sup>, 2011.
14. Nagaphani Aetukuri, Materials Science and Engineering, Stanford University, January 2008- present, defended Ph.D. February 6<sup>th</sup>, 2012.
15. Joanna Lankester, Ph.D. Student, Electrical Engineering, Stanford University, March 2008- June 2009.

16. Weifeng Zhang, Ph.D. Student, Materials Science and Engineering, Stanford University, July 27, 2009- October 2015. (passed qualifying exam, May 2010). Defended Ph.D. April 2015.a
17. Priscila Barba, KAUST, Kingdom of Saudi Arabia, September 2011- August 2014. Co-Advisor Prof. Aurelien Manchon (KAUST).
18. Timothy Phung, Ph.D. Student, Electrical Engineering, Stanford University, September 28, 2009-October 2013, defended Ph.D. January 2014.
19. Mingyang Li, Ph.D. Student, Physics, Stanford University, April 2010- March 21, 2013, defended Ph.D., February 18<sup>th</sup>, 2013.
20. Reinier van Mourik, TU Eindhoven, The Netherlands, October 2011 – November 6, 2015. Co-advisor: Prof. Bert Koopmans, defended Ph.D., November 2015.
21. Andrea Fantini, Ph.D. Student, MAINZ Excellence School, University of Mainz, Germany, February 2012 –
22. Donata Passarello, Ph.D. Student, MAINZ Excellence School, University of Mainz, Germany, October 2012 – November 2015, defended Ph.D., November 2015.
23. Yari Ferrante, MAINZ Excellence School, University of Kaiserslautern, Germany, June 3<sup>rd</sup>, 2013 -2018.

*Ph.D. Students – MPI for Microstructure Physics*

- Chirag Garg, Ph.D. Student, Indian Institute of Technology, Varanasi, August 2014-July 2017.
- Panagiotis Filippou, Ph.D. Student, Institut Polytechnique de Grenoble, September 2014-August 2017.
- James Taylor, Ph.D. Student, Durham University, October 2014-September 2017.
- Tianping Ma, Ph.D. Student, Fudan University, January 2015-December 2017.
- Andrea Fantini, Ph.D. Student, Johannes Gutenberg University Mainz, January-July 2015.
- Yari Ferrante, Ph.D. Student, Polytechnic of Turin, June 2015-December 2016.
- Avanindra Kumar Pandeya, Ph.D. Student, Indian Institute of Technology, Kanpur, July 2015-June 2018.
- Yuechen Zhuang, Ph.D. Student, School of Electronic, Electrical & Communication Engineering, University of Chinese Academy of Sciences, August 2015-July 2018.
- Jue Huang, Ph.D. Student, Tsinghua University Beijing, August 2015-July 2018.
- Hao Yang, Ph.D. Student, Tsinghua University Beijing, August 2015-July 2018.
- Albrecht Köhler, Ph.D. Student, Goethe University Frankfurt Main, September 2015-December 2016.
- Donata Passarello, Ph.D. Student, Polytechnic of Turin, September 2015-March 2016.
- Robin Bläsing, Ph.D. Student, RWTH Aachen University, October 2015-September 2018.
- Haifeng Yang, Oxford University, December 2015-April 2016 (visiting student).
- Teng Zhang, Tsinghua University, April-July 2016 (visiting student).
- Arnab Manna, IIT Bombay, May-July 2016 and November 2016-January 2017 (internship).
- Ankit Kumar Sharma, Ph.D. Student, Jawaharlal Nehru Centre for Advanced Scientific Research Bangalore, July 2016-May 2019.
- Qihang Zhang, Tsinghua University, July-September 2016 (visiting student).
- Qunsong Zeng, Clarendon Laboratory, August-September 2016 (visiting student).
- Xinjing Huang, Clarendon Laboratory, August-September 2016 (visiting student).
- Shuoying (Elisa) Yang, Ph.D. Student, Columbia University, September 2016-August 2019.
- Jibo Zhang, Ph.D. Student, Peking University, September 2016-August 2020 (CSC Scholarship).
- Tom Lichtenberg, University of Technology Eindhoven, September-December 2016 (internship).
- Kai-Uwe Demasius, Ph.D. Student, Dresden University of Technology, October 2016-September 2019.
- Jie Zhang, Ph.D. Student, University of Science and Technology Beijing, October 2016-March 2017.
- Abhay Kant Srivastava, Ph.D. Student, IIT Delhi, November 2016-May 2019.
- Alessandro Fumarola, Ph.D. Student, EPFL, November 2016-October 2019.
- Jagannath Jena, Ph.D. Student, IIT Kanpur, November 2016-October 2019.
- Elena Derunova, Ph.D. Student, Voronezh State University, December 2016-November 2019.
- Bharat Grover, Ph.D. Student, IIT Delhi, January 2017-December 2019.
- Jiho Yoon, Ph.D. Student, Ecole Polytechnique Palaiseau, Kyung Hee University, February 2017-January 2020.
- Kyrylo Dronov, V. N. Karazin Kharkiv National University, May 2017 (internship).
- Chengao Wang, Tsinghua University, June-September 2017 (internship).
- Pranava Keerthi Sivakumar, Indian Institute of Science Bengaluru, August 2017.
- Mohamed Amine Wahada, Ph.D. Student, Keio University Tokyo, August 2017.

Contributed Talks and Invited & Contributed Talks by co-authors (incomplete list)

1. "Magnetic and Transport Properties of 3d Transition Metal Intercalates of some Group Va Transition Metal Dichalcogenides", S.S.P. Parkin and R.H. Friend, International Conference on Layered Materials and Intercalates, Nijmegen, Holland, August 1979.
2. "Three New Superconductors in the (TMTSeF)<sub>2</sub>X Family", S.S.P. Parkin, M. Ribault, D. Jerome and K. Bechgaard, Congres de la Societe Francaise de Physique, Clermont-Ferrand, June 1981.
3. "Pressure-Temperature Phase diagram of (TMTSeF)<sub>2</sub>ReO<sub>4</sub>", S.S.P. Parkin, D. Jerome and K. Bechgaard, Congres de la Societe, Francaise de Physique, Clermont-Ferrand, June 1981.
4. "Superconductivity in the Family of Organic Salts Based on the (TMTSeF) Molecule", S.S.P. Parkin, M. Ribault, D. Jerome and K. Bechgaard, International Conference on Low-Dimensional Conductors, Boulder, Colorado, USA, August 1981.
5. "Measurement of the Thermal Expansion of the Lattice Parameters in (TMTSeF)<sub>2</sub>PF<sub>6</sub> and TMTSF-DMTCNQ", D.R.P. Guy, E.A. Marseglia, S.S.P. Parkin, R.H. Friend and K. Bechgaard, International Conference on Low-Dimensional Conductors, Boulder, Colorado, USA, August 1981.
6. "Recent Experimental Data on a Family of Magnetic Layered Intercalates: Evidence for Conduction Electron-Local Moment Interaction", S.S.P. Parkin, E.A. Marseglia, S.C. Bayliss and P.J. Brown, European Physical Society, Condensed Matter Division General Conference, Manchester (U.K.), March 1982.
7. "Stabilization of a Highly Conducting State to Low Temperatures in (TMTTF)<sub>2</sub>Br", S.S.P. Parkin, F. Creuzet, D. Jerome, J.M. Fabre and K. Bechgaard, A.P.S. March Meeting, Dallas, Texas, USA, March 1982 [Bull. Am. Phys. Soc. 27, 151 (1982)].
8. "Anion Ordering in (TMTTF)<sub>2</sub>X and (TMTSeF)<sub>2</sub>X Salts", S.S.P. Parkin, J. Mayerle and E.M. Engler, Synthetic Low-Dimensional Conductors and Superconductors, Les Arcs, Bourg Saint-Maurice, France, December 1982.
9. "Magnetic Study of the Metal-Insulator Transitions in TMTTF<sub>2</sub>X Salts", S.S.P. Parkin, J.C. Scott, J.B. Torrance and E.M. Engler, Synthetic Low-Dimensional Conductors and Superconductors, Les Arcs, Bourg Saint-Maurice, France, December 1982.
10. "XAS in Organic Linear Chain Conductors", S.S.P. Parkin and J.V. Acrivos, Synthetic Low-Dimensional Conductors and Superconductors, Les Arcs, Bourg Saint-Maurice, France, December 1982.
11. "Transport Properties Under Pressure of (TMTTF)<sub>2</sub>PF<sub>6</sub> and (TMTTF)<sub>2</sub>Br", F. Creuzet, S.S.P. Parkin, D. Jerome, K. Bechgaard and J.M. Fabre, Synthetic Low-Dimensional Conductors and Superconductors, Les Arcs, Bourg Saint-Maurice, France, December 1982.
12. "A Narrow Window for Organic Superconductivity", S.S.P. Parkin, J. Voiron, R.L. Greene and E.M. Engler, Int. Conf. Synthetic Metals, Abano Terme, July 1984.
13. "The Importance of Localization Effects in (TMTTF)<sub>2</sub>X", C. Coulon, S.S.P. Parkin and R. Laversanne, Int. Conf. Synthetic Metals, Abano Terme, July 1984.
14. "Unusual Magnetic Properties of Ta/Fe and Tb/Fe Multilayered Thin Film Structures", K.R. Shull, S.S.P. Parkin and A.E. Bell, A.P.S. Meeting, Baltimore, PA, USA, March 29, 1985 [Bull. Am. Phys. Soc. 30, 351 (1985)].
15. "Magnetic Dead Layer of 25Å Thickness in Fe<sub>3</sub>O<sub>4</sub>", S.S.P. Parkin, R. Sigsbee, R. Felici and G.P. Felcher, 30th Annual Conf. Mag. Mat., San Diego, Nov 27-30, 1984 [J. Appl. Phys. 57,3771 (1985)].
16. "Study of Volume Superconductivity in ET<sub>2</sub>X<sub>3</sub> Superconductors", H. Schwenk, S.S.P. Parkin, V.Y. Lee and R.L. Greene, International Conference on Science and Technology of Synthetic Metals, Kyoto, Japan, June 1-6, 1986.
17. "Magnetic Profiles of Permalloy Films with Unidirectional Anisotropy", S.S.P. Parkin, J.K. Howard, R. Hilleke and G.P. Felcher, March Meeting, American Physical Society, Las Vegas, Nevada, March 31st, 1986.
18. "ESR Study of Optically Induced Magnetic Phase Transitions in BEDT-TTF<sub>3</sub>Ta<sub>2</sub>F<sub>11</sub>", J.V. Acrivos, H.P. Hughes and S.S.P. Parkin, March Meeting, American Physical Society, Las Vegas, Nevada, June 2nd, 1986.
19. "ESR of Doublet and Triplet States in a Charge Transfer Insulator: BEDT-TTF<sub>3</sub>Ta<sub>2</sub>F<sub>11</sub>", J.O. Adams, J.V. Acrivos, S. Oostra and S.S.P. Parkin, March Meeting, American Physical Society, Las Vegas, Nevada, June 2nd, 1986.
20. "The Growth and Properties of Epitaxial α-Fe Films grown on Lattice-Matched III-V Compound Semiconductor Films", R.F.C. Farrow, S.S.P. Parkin, R. Beyers, J.M. Woodall and S.J. Wright, APS March Meeting, March 16, 1987.
21. "Ferromagnetic Resonance and Magnetization in Exchanged Biassed Permalloy Thin Films", J.C. Scott, W. Stoecklein and S.S.P. Parkin, APS March Meeting, March 17, 1987.
22. "Organic Ferromagnets: New Model and New Model Systems", J.B. Torrance, I. Johannsen, A. Nazzal, S. Oostra, S.S.P. Parkin and P. Batail, APS March Meeting, March 18, 1987.

23. "Exchange Bias in Multi-Layered NiFe/FeMn Thin Film Structures", S.S.P. Parkin, D.P. Brunco, K.P. Roche and V.S. Speriosu, APS March Meeting, March 19, 1987.
24. "Static and Dynamic Measurements on NiFe/FeMn Exchange-Bias Thin Film Structures", V.S. Speriosu, S.S.P. Parkin and C.H. Wilts, APS March Meeting, March 19, 1987.
25. "MBE Growth and Properties of Fe Films on Lattice-Matched  $\text{In}_x\text{Ga}_{1-x}\text{As}$  Films", R.F.C. Farrow, S.S.P. Parkin, R.B. Beyers, M. Lang, V.S. Speriosu, P. Pitner, J.M. Woodall, S.J. Wright, P.D. Kirchner, and G.D. Petit, Eight MBE workshop, UCLA, Los Angeles, September 9-11, 1987.
26. "Epitaxial Growth of Rare Earths on Rare Earth Fluorides and Rare Earth Fluorides on Rare Earths: Two New Epitaxial Systems accessed by MBE", R.F.C. Farrow, M. Lang and S.S.P. Parkin, Eighth MBE workshop, UCLA, Los Angeles, September 9-11, 1987.
27. "Super-, Metallic-, and Semi-Conductivity in a wide Variety of Copper Oxide Systems and Their Correlations with Structure and Chemical Composition", J.B. Torrance, A. Nazzal, Y. Tokura and S.S.P. Parkin, 194th American Chemical Society National Meeting, New Orleans, Louisiana, August 30-September 4, 1987.
28. "Superconductivity above 90 K in Oxygen-Defect Perovskites: Structural, Optical, Transport and Magnetic Properties", P.M. Grant, R.B. Beyers, E.M. Engler, G. Lim, S.S.P. Parkin, M.L. Ramirez, V.Y. Lee, A. Nazzal, J.E. Vazquez and R.J. Savoy, 194th American Chemical Society National Meeting, New Orleans, Louisiana, August 30-September 4, 1987.
29. "Superconductivity above Liquid Nitrogen Temperature: Preparation and Properties of a Family of Perovskite-Based Superconductors", E.M. Engler, V.Y. Lee, A. Nazzal, R.B. Beyers, G. Lim, P.M. Grant, S.S.P. Parkin, M.L. Ramirez, J.E. Vazquez and R.J. Savoy, 194th American Chemical Society National Meeting, New Orleans, Louisiana, August 30-September 4, 1987.
30. "Superconductivity in the Vicinity of Oxygen Equal to 6.5 in  $\text{YBa}_2\text{Cu}_3\text{O}_x$ : Crossover From Superconducting to Semiconducting Behavior", E.M. Engler, V.Y. Lee, R. Jacowitz, G. Lim, R.B. Beyers, A.I. Nazzal, S.S.P. Parkin, K.P. Roche, M. Ramirez, J. Vazquez and P.M. Grant, Materials Research Meeting, Reno, Nevada, April 5-8, 1988.
31. "Aerosol Flow Reactor Production of Fine  $\text{YBa}_2\text{Cu}_3\text{O}_7$  Powder: Fabrication of Superconducting Ceramics", T.T. Kodas, E.M. Engler, V.Y. Lee, R. Jacowitz, T.H. Baum, K.P. Roche and S.S.P. Parkin, Materials Research Meeting, Reno, Nevada, April 5-8, 1988.
32. "Metallic, but not Superconducting La-Ba (and La-Sr) Copper Oxides", A.I. Nazzal, J.B. Torrance, Y. Tokura, S.S.P. Parkin, T.C. Huang and S.J. La Placa, American Physical Society March Meeting, New Orleans, 1988.
33. "Magnetism of High Temperature Superconductors", S.S.P. Parkin, R.B. Beyers, E.M. Engler and V.Y. Lee, American Physical Society March Meeting, New Orleans, March 21-25, 1988.
34. "Finite Size Scaling in Ultra Thin Antiferromagnetic Films", S.S.P. Parkin, K.P. Roche and V.S. Speriosu, American Physical Society March Meeting, New Orleans, March 21-25, 1988.
35. "Metallic, but not Superconducting La-Ba (and La-Sr) Copper Oxides", J.B. Torrance, Y. Tokura, A.I. Nazzal, S.S.P. Parkin, T.C. Huang and S.J. La Placa, Int. Conf. High Temperature Superconductors, Interlaken, Switzerland, February 29-March 4, 1988.
36. "Torque Magnetometry of NiFe/FeMn Thin Films", V.S. Speriosu and S.S.P. Parkin, International Conference on Magnetism, Paris, France, July 15-29, 1988.
37. "Phase Behavior and Molecular Order in a Semiflexible Thermotropic/Lyotropic Polymer", D.Y. Yoon, C. Viney, S.S.P. Parkin, B. Reck and H. Ringsdorf, American Chemical Society Meeting, Toronto, June 12-16, 1988.
38. "Penetration of the Magnetic Field into Superconducting  $\text{YBa}_2\text{Cu}_3\text{O}_x$ ", A. Mansour, R.O. Hilleke, G.P. Felcher, R.B. Laibowitz, P. Chaudhari and S.S.P. Parkin, International Conference on Neutron Scattering, Grenoble, France, July 1988.
39. "X-ray Double Crystal Diffraction Characterization of Epitaxial Magnetic Transition Metal Difluoride Films", M. Liu, A.R. King, V. Jaccarino, R.F.C. Farrow and S.S.P. Parkin
40. "Structure of Fe/Cr/Fe superlattice assemblies made by different processes", F. Parmigiani, S.S.P. Parkin, T. Huang, E. Kay, K.R. Coffey and D. Mauri, 37th Annual AVS Symposium, 1990.
41. "Ferromagnetic Resonance of Co/Pt Multilayers", Z. Zhang, P.E. Wigen and S.S.P. Parkin Magnetism and Magnetic Materials conference, San Diego, October 29- November 1, 1990.
42. "Synchrotron x-ray diffraction studies of the lattice and magnetic structure of epitaxial Dy films in  $\text{LaF}_3 / \text{Dy} / \text{LaF}_3$  sandwiches", R.F.C. Farrow, M.F. Toney, B.D. Hermsmeier, S.S.P. Parkin and D.G. Wiesler, Magnetism and Magnetic Materials conference, San Diego, October 29-November 1, 1990 [J. Appl. Phys. **69**, 5319 (1991)].
43. "Giant Magnetoresistance and Oscillatory Interlayer Exchange Coupling in Cu Based Multilayer Structures", S.S.P. Parkin, 1991 March Meeting of the American Physical Society, Pittsburgh, 18-22 March 1991.

44. "Magnetic and Magneto-optic Properties in Fe/Pt Multi-layer Films", S. Iwata, S.S.P. Parkin, H. Nuri and T. Suzuki, MRS Spring Meeting, Anaheim, California, April 29- May 3, 1991.
45. "Oscillatory Interlayer Exchange Coupling Through Cu and Various Transition Metals", S.S.P. Parkin, MRS Spring Meeting, Anaheim, California, April 29- May 3, 1991.
46. "Giant Magnetoresistance and Oscillatory Exchange Coupling in Cu Based Multilayered Structures", S.S.P. Parkin, MRS Spring Meeting, Anaheim, California, April 29- May 3, 1991.
47. "Heteroepitaxy via Seed Films: Application to Magnetic Metal Superlattices", R.F. Marks, R.F.C. Farrow, S.S.P. Parkin, C.H. Lee, B.D. Hermsmeier, C.J. Chien and S.B. Hagstrom, MRS Spring Meeting, Anaheim, California, April 29- May 3, 1991.
48. "HREM Contributions to Microstructural Investigations of Magnetic Thin Films and Ultrathin Multilayers", Z.G. Li, D.J. Smith and S.S.P. Parkin, 49th Annual Meeting of the Electron Microscopy Society of America, San Jose, August 4-9, 1991.
49. "Oscillatory Interlayer Exchange Coupling Through Transition Metal Layers", S.S.P. Parkin, International Conference on Magnetism, Edinburgh, Scotland, September 3-6, 1991.
50. "Magnetic properties of FeCo/Pt Multilayer Films", S. Iwata, S.S.P. Parkin, T. Suzuki and D. Weller, 15th Annual Conference of the Magnetics Society of Japan, Tsukuba, Japan, October 29- November 1, 1991.
51. "Magnetic Properties and Microstructure in (Fe,Co)/Pt Multilayer Films", T. Suzuki, H. Notarys, S.S.P. Parkin, S. Iwata and D. Dobbertin, Optical Data Storage Topical Meeting, San Jose, California, February 9-13, 1992.
52. "Optical and Magneto-Optical Characterization of Evaporated Co/Pt Multilayers and Alloys", H. Brandle, D. Weller, J.C. Scott, S.S.P. Parkin and C.-J. Lin, Intermag '92, St. Louis, 1992.
53. "Microscopic Observation of the Magnetic Phase Transitions in Gd/Fe Multilayers", M. Loewenhaupt, W. Hahn, Y.Y. Huang, G.P. Felcher and S.S.P. Parkin, American Physical Society March Meeting, Indianapolis, March 16-20, 1992, [Bull. Amer. Phys. Soc. **37**, 145 (1992)].
54. "Magnetic Response in Annealed Fe/Cr Multilayers", Y.Y. Huang, G.P. Felcher, M. Loewenhaupt and S.S.P. Parkin, American Physical Society March Meeting, Indianapolis, March 16-20, 1992, [Bull. Amer. Phys. Soc. **37**, 197 (1992)].
55. [Invited] "Microscopic Observation of the Magnetic Phase Transitions in Gd/Fe Multilayers", M. Loewenhaupt, W. Hahn, Y.Y. Huang, G.P. Felcher and S.S.P. Parkin, German Physical Society (DPG) Meeting, Regensburg, Germany, March 16-20, 1992.
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57. [Invited] "Determination of Spin Structures of Magnetic Multilayers by Polarized Neutron Reflectometry", M. Loewenhaupt, W. Hahn, Y.Y. Huang, G.P. Felcher and S.S.P. Parkin, International Conference on the Physics of Transition Metals, ICPTM 92, Darmstadt, Germany, July 20-24, 1992.
58. "Distribution of Magnetic Moments in Co/Pt and Co/Pt/Ir/Pt Multilayers Detected by Magnetic Absorption", M. Knülle G. Schütz, S.S.P. Parkin, P. Fischer, S. Stähler and H Ebert, 7th International Conference on X-ray Absorption Fine Structure, Kobe, Japan, August 23-29, 1992.
59. "Antiferromagnetic Coupling and Giant MR in MBE-grown Co/Cu Multilayers Oriented along Cu [111]", R.F. Marks, G. Harp, S.S.P. Parkin and R.F.C. Farrow, International Symposium on Magnetic Thin Films, Multilayers and Surfaces, Lyon, France, September 7-10, 1992.
60. "Oscillatory Interlayer Exchange Coupling of Co/Ru and Permalloy/Ru Multilayers investigated by Brillouin Light Scattering", J. Fassbender, F. Nörtemann, R.L. Stamps, R.E. Camley, B. Hillebrands, G. Güntherodt and S.S.P. Parkin, International Symposium on Magnetic Thin Films, Multilayers and Surfaces, Lyon, France, September 7-10, 1992.
61. "Spin Structure of Fe/Gd and Fe/Cr Multilayers Determined by Polarized Neutron Reflectometry", M. Loewenhaupt, W. Hahn, Y.Y. Huang, G.P. Felcher and S.S.P. Parkin, Symp. Magnetic Ultra Thin Films, Multilayers and Surfaces, Lyon, France, September 7-10, 1992.
62. "Structural Characterization of Thin Co/Cu Superlattices", A.R. Modak, D.J. Smith, R.F. Marks, R.F.C. Farrow and S.S.P. Parkin, Magnetism and Magnetic Materials Conference, Houston, Texas, December 1-4, 1992.
63. "Magnetothermopower of Co/Cu Multilayers", Jing Shi, R.C. Yu, S.S.P. Parkin and M.B. Salamon, Magnetism and Magnetic Materials Conference, Houston, Texas, December 1-4, 1992.
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67. "Noise in Co/Cu Multilayers", H.T. Hardner, M.B. Weissman, M.B. Salamon and S.S.P. Parkin, March Meeting of the American Physical Society, Seattle, Washington, March 22-26, 1993.
68. "Growth Temperature Dependence of Magnetoresistance in Co/Cu(111) Wedged Superlattices", G.R. Harp, S.S.P. Parkin, R.F.C. Farrow, R.F. Marks, M.F. Toney, Q.H. Lam, T.A. Rabedeau and R.J. Savoy, March Meeting of the American Physical Society, Seattle, Washington, March 22-26, 1993.
69. "Giant Magnetoresistance and Co Cluster Size in Phase Segregated Co-Cu Granular Alloys", T.A. Rabedeau, M.F. Toney, R.F. Marks, R.F.C. Farrow, G. Harp and S.S.P. Parkin, March Meeting of the American Physical Society, Seattle, Washington, March 22-26, 1993.
70. "Domain and Domain Wall Observations on Sputtered Spin Valve Systems", R. Schäfer, A. Hubert and S.S.P. Parkin, IEEE Magnetics Society, Intermag'93, Stockholm, Sweden, April 13-16, 1993.
71. "Structural Characterization of Thin Co/Cu Superlattices", A.R. Modak, D.J. Smith and S.S.P. Parkin, Symposium on Magnetic Ultrathin Films, Multilayers and Surfaces, Materials Research Society, San Francisco, April 13-16, 1993.
72. "Growth Temperature Dependence of Magnetoresistance and Growth Mode in Co/Cu(111) Superlattice Wedges", G.R. Harp, S.S.P. Parkin, R.F.C. Farrow, R.F. Marks, M.F. Toney, Q.H. Lam, T.A. Rabedeau, A. Cebollada and R.J. Savoy, Symposium on Magnetic Ultrathin Films, Multilayers and Surfaces, Materials Research Society, San Francisco, April 13-16, 1993.
73. "Giant Magnetoresistance and Structure of Phase-Segregated Epitaxial Metals", R.F. Marks, G. Harp, S.S.P. Parkin, R.F.C. Farrow, T.A. Rabedeau, M. Toney and A. Cebollada, Symposium on Magnetic Ultrathin Films, Multilayers and Surfaces, Materials Research Society, San Francisco, April 13-16, 1993.
74. "Structural and Magnetic X-ray Properties of Co/Cu Multilayers from Polarization Dependent X-ray Absorption", S. Pizzini, C. Giorgetti, F. Baudalet, E. Dartyge, A. Fontaine, J.F. Bobo, M. Piecuch, S. Stabler, G. Schütz, S.S.P. Parkin, J. Stöhr and C. Marliere, Symposium on Magnetic Ultrathin Films, Multilayers and Surfaces, Materials Research Society, San Francisco, April 13-16, 1993.
75. "Circular Magnetic X-ray Dichroism Studies in Pt-Co and Tb-Fe Multilayers", G. Schütz, P. Fischer, M. Knülle, S. Stähler, K. Attenkofer, S.S.P. Parkin, D. Weller and B. Scholz, Symposium on Magnetic Ultrathin Films, Multilayers and Surfaces, Materials Research Society, San Francisco, April 13-16, 1993.
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77. "Ferromagnetic Coupling Through Pd in Co/Pd Multilayers Studied by Magnetic X-ray Circular X-ray Dichroism", D. Weller, Y. Wu, S.S.P. Parkin, J. Stöhr and M.G. Samant, Symposium on Magnetic Ultrathin Films, Multilayers and Surfaces, Materials Research Society, San Francisco, April 13-16, 1993.
78. "Giant Magnetoresistance 1/f Noise in Co/Cu Multilayers", H.T. Hardner, M.B. Weissman, M.B. Salamon and S.S.P. Parkin, 38th Annual Conference on Magnetism and Magnetic Materials, Minneapolis, Minnesota, November 15-18, 1993.
79. "Magnetothermopower of Co /  $\text{Cu}_{1-x}\text{Ni}_x$  Multilayers", J. Shi, E. Kita, S.S.P. Parkin and M.B. Salamon, 38th Annual Conference on Magnetism and Magnetic Materials, Minneapolis, Minnesota, November 15-18, 1993.
80. "Giant Magnetoresistance and Microstructural Characteristics of Epitaxial FeAg and CoAg Granular Thin Films", N. Thangaraj, C. Echer, M. Krishnan, R.F.C. Farrow, R.F. Marks and S.S.P. Parkin, 38th Annual Conference on Magnetism and Magnetic Materials, Minneapolis, Minnesota, November 15-18, 1993.
81. "Electron Microscope Observations of the Magnetic Domain Structures in Magneto-resistive Multilayers", L. Heyderman, J.N. Chapman and S.S.P. Parkin, CAMST, United Kingdom, October 24-25, 1993.
82. "Magneto-optic Investigation of Dependence of Interlayer Coupling Strength on Permalloy Thickness in Permalloy/Ru/Permalloy Wedges", J. McCord, A. Hubert and S.S.P. Parkin, Micromagnetics of Multilayers, Institut für Werkstoffwissenschaften, Universität Erlangen-Nürnberg, January 20, 1994.
83. "Effect of grain size on magnetoresistance of Co/Cu multilayer thin films", A.R. Modak, D.J. Smith and S.S.P. Parkin, Materials Research Society Spring Meeting, San Francisco, April 4-8, 1994.
84. "Investigation of the Magnetic Structures in GMR Multilayer Films by Electron Microscopy", L. Heyderman, J.N. Chapman and S.S.P. Parkin, 6th Joint MMM-Intermag conference, Albuquerque, New Mexico June 20-23, 1994.
85. "Giant Magnetoresistance at Low Fields in  $[(\text{Ni}_x\text{Fe}_{1-x})_y\text{Ag}_{1-y}]/\text{Ag}$  Multilayers Prepared by Molecular Beam Deposition", R.F.C. Farrow, R.F. Marks, A. Cebollada, M.F. Toney, D. Dobbertin, R. Beyers and S.S.P. Parkin, 6th Joint MMM-Intermag conference, Albuquerque, New Mexico June 20-23, 1994 [J. Appl. Phys. **76**, 6618 (1994)].

86. "Direct Observation of Rh Magnetic Moment Using X-ray Magnetic Circular Dichroism", G.R. Harp, S.S.P. Parkin, W.L. O'Brien and B.P. Tonner, 6th Joint MMM-Intermag conference, Albuquerque, New Mexico, June 20-23, 1994.
87. "Low field giant magnetoresistance and oscillatory interlayer exchange coupling in polycrystalline and (111) oriented permalloy/Au multilayers", S.S.P. Parkin, T.A. Rabedeau, R.F.C. Farrow and R. Marks, 6th Joint MMM-Intermag conference, Albuquerque, New Mexico June 20-23, 1994 [J. Appl. Phys. **76**, 6617 (1994)].
88. "Evidence for absence of significant spin-dependent bulk scattering contribution to giant magnetoresistance", S.S.P. Parkin, 14th International Colloquium on Magnetic Films and Surfaces, Düsseldorf, Germany, August 29- September 2, 1994.
89. "Orientation dependence of giant magnetoresistance in 100, 110 and 111 oriented Cu-based multilayers prepared by sputter deposition using seeded epitaxy techniques", S.S.P. Parkin, 14th International Colloquium on Magnetic Films and Surfaces, Düsseldorf, Germany, August 29- September 2, 1994.
90. "X-ray Magnetic Circular Dichroism Study of Fe/V Multilayers", G.R. Harp, S.S.P. Parkin, B.P. Tonner and W.L. O'Brien, American Physical Society March Meeting, San Jose, California, March 20-24, 1995.
91. "Search for oscillatory behavior as a function of Fe thickness in (100) Fe/Cr/Fe wedges" H.T. Hardner, M.W. Hart and S.S.P. Parkin, American Physical Society March Meeting, San Jose, California, March 20-24, 1995.
92. "Observation of Domains in GMR Materials", H.T. Hardner, M.B. Weissman, M.B. Salamon, R. Loloee, J. Bass and S.S.P. Parkin, American Physical Society March Meeting, San Jose, California, March 20-24, 1995.
93. "Structure and Interfacial Roughness of Py/Au Multilayers by Bragg and Diffuse x-ray Scattering", R. Paniago, H. Homma, P.C. Chow, S.C. Moss, A. Barnea, D. Cookson, S.S.P. Parkin, T.J. Davis, A.W. Stevenson and S.W. Wilkins, American Physical Society March Meeting, San Jose, California, March 20-24, 1995.
94. "X-ray Magnetic Circular Dichroism Study of the Induced Spin Polarization of Cu Spacer Layers in Co/Cu and Fe/Cu Multilayers", G.A. Held, M.G. Samant, J. Stöhr, S.S.P. Parkin, B.D. Hermsmeier, M. van Schilfgaarde and R. Nakajima, American Physical Society March Meeting, San Jose, California, March 20-24, 1995.
95. "Anomalous X-ray Scattering Study of Interfacial Roughness in Py/Cu Superlattices", H. Homma, R. Paniago, J. Wang, S.C. Moss, P. Zschack and S.S.P. Parkin, American Physical Society March Meeting, San Jose, California, March 20-24, 1995.
96. "Theory of oscillatory exchange coupling in Fe/(V,Cr) and Fe/(Cr,Mn) Magnetic Multilayers", F. Herman, M. van Schilfgaarde, S.S.P. Parkin and J. Kudrnovsky, American Physical Society March Meeting, San Jose, California, March 20-24, 1995.
97. "Anisotropy of Giant Magnetoresistance in Crystalline Co/Cu and Permalloy/Cu Multilayers", S.S.P. Parkin, T.A. Rabedeau, A.R. Modak and D.J. Smith, Materials Research Society Spring Meeting, San Francisco, California, April 17-21, 1995.
98. "Highly oriented Co/Cu superlattices grown by dc sputtering", A.R. Modak, D.J. Smith and S.S.P. Parkin, Materials Research Society Spring Meeting, San Francisco, California, April 17-21, 1995.
99. "Digital Magnetoresistive Sensors", S.S.P. Parkin, ARPA/NRL/ONR Magnetic Materials and Devices Workshop, Arlington, Virginia, May 16-18, 1995.
100. "A Summary of Experimental Observations of Magnetoresistance in La-Y-Ca-Mn-O Thin Films", J.Z. Sun, L. Krusin-Elbaum, R.B. Laibowitz, W.J. Gallagher, S.S.P. Parkin and G. Xiao, ARPA/NRL/ONR Magnetic Materials and Devices Workshop, Arlington, Virginia, May 16-18, 1995.
101. "Study of roughness conformality in magnetic metallic multilayers by non-specular x-ray reflectivity", R. Paniago, H. Homma, P.C. Chow, S.C. Moss, Z. Barnea, D. Cookson, S.S.P. Parkin, T.J. Davis, A.W. Stevenson, S.W. Wilkins and J. Harada, Fourth Surface X-ray and Neutron Scattering Conference, Lake Geneva, Wisconsin, June 25-30, 1995.
102. "Investigation of Interlayer Magnetic Coupling in Sputtered Epitaxial Fe/Cr Wedges Sandwiches", X. Bian, H.T. Hardner and S.S.P. Parkin, 40th Annual Conference on Magnetism and Magnetic Materials, Philadelphia, Pennsylvania, November 6-9, 1995.
103. "Biquadratic coupling in  $Ni_xFe_{1-x}/Cu$  multilayers observed via magnetoresistance", K. Pettit, M.B. Salamon and S.S.P. Parkin, American Physical Society March Meeting, St. Louis, 18-22 March 1996.
104. "Quantum well confinement and the oscillatory exchange coupling in  $Co_xNi_{1-x}/Cu$  (001) multilayers", D. -J. Huang, P.D. Johnson and S.S.P. Parkin, American Physical Society March Meeting, St. Louis, 18-22 March 1996.
105. "Synthesis and field-dependent magnetization of thin film manganates", J.Z. Sun, L. Krusin-Elbaum, A. Gupta, S.S.P. Parkin and G. Xiao, American Physical Society March Meeting, St. Louis, 18-22 March 1996.
106. "Oscillatory Antiferromagnetic Coupling and Giant Magnetoresistance in Epitaxial Multilayers Containing Fe Spacer Layers", S.P.P. Parkin, X. Bian and M. Toney, American Physical Society March Meeting, St. Louis, 18-22 March 1996.

107. "Anisotropic Interfacial Roughness and Giant Magnetoresistance in Sputtered Co/Rh(110) Multilayers", S.S.P. Parkin, M.F. Toney, G. Segre and J. Orenstein, American Physical Society March Meeting, St. Louis, 18-22 March 1996.
108. "Resistance noise in uncoupled giant magnetoresistive multilayers", H.T. Hardner, M.B. Weissman, B. Miller, R. Loloee and S.S.P. Parkin, Intermag, 1996.
109. "Magnetic Tunnel Junctions Fabricated at Tenth-Micron Dimensions by Electron Beam Lithography", S.A. Rishton, R. Altman, A. Marley, X.P. Bian, C. Jahnes, R. Viswanathan, W.J. Gallagher and S.S.P. Parkin, Micro and Nano Engineering 96, Glasgow, Scotland, September 22-25, 1996.
110. "Magnetic Properties of Co/Ir(110) multilayer", H. Yanagihara, Eiji Kita, Kevin Pettit, M. B. Salamon, S.S.P. Parkin, Sectional Meeting of the Physical Society of Japan, Yamaguchi, October 1-4, 1996.
111. [Invited] "Microstructured Magnetic Tunnel Junctions", W.J. Gallagher, S.S.P. Parkin, Y. Lu, X.P. Bian, A. Marley, R.A. Altman, S.A. Rishton, K.P. Roche, C. Jahnes, T.M. Shaw and G. Xiao, 41st Annual Conference on Magnetism and Magnetic Materials, Atlanta, Georgia, November 12-15, 1996.
112. "Magneto-optical Spin Spectroscopy in Hybrid (Ferro) Magnetic Semiconductor Heterostructures", P. A. Crowell, V. Nikitin, D.D. Awschalom, F. Flack, N. Samarth, A.C. Marley, S. Gider, S.S.P. Parkin and G.A. Prinz, 41st Annual Conference on Magnetism and Magnetic Materials, Atlanta, Georgia, November 12-15, 1996.
113. "Brillouin Light Scattering and Ferromagnetic Resonance in Sputtered NiFe/Cu/NiFe Thin Films", M.A. Lucena, F.M. de Aguiar, S.M. Rezende, C. Chesman, A. Azevedo and S.S.P. Parkin, 41st Annual Conference on Magnetism and Magnetic Materials, Atlanta, Georgia, November 12-15, 1996.
114. "Exchange Coupling in Sputtered Fe/Cr/Fe(100) Sandwich Structures", C. Chesman, A. Azevedo, S.M. Rezende, F.M. de Aguiar, X. Bian and S.S.P. Parkin, 41st Annual Conference on Magnetism and Magnetic Materials, Atlanta, Georgia, November 12-15, 1996.
115. "MnPt: A New Exchange Bias Material for Permalloy", R.F.C. Farrow, R.F. Marks, A.C. Marley, S. Gider and S.S.P. Parkin, 41st Annual Conference on Magnetism and Magnetic Materials, Atlanta, Georgia, November 12-15, 1996.
116. "Low Field Magnetoresistance in Magnetic Tunnel Junctions Prepared by Contact Masks and Lithography: 25% MR at 295 K in Mega-Ohm Micron-Sized Junctions", S.S.P. Parkin, R.E. Fontana and A.C. Marley 41st Annual Conference on Magnetism and Magnetic Materials, Atlanta, Georgia, November 12-15, 1996.
117. "Voltage Dependence of the Magneto-Resistance and The Tunneling Current in Magnetic Tunnel Junctions", A.C. Marley and S.S.P. Parkin, 41st Annual Conference on Magnetism and Magnetic Materials, Atlanta, Georgia, November 12-15, 1996.
118. "Spin Dependent Tunneling Conductance in Sub-Micron Magnetic Tunnel Junctions", Yu Lu, S.S.P. Parkin, G. Xiao, A.C. Marley, S. Rishton, R. Altman, J.Z. Sun, C. Jahnes and W.J. Gallagher, 41st Annual Conference on Magnetism and Magnetic Materials, Atlanta, Georgia, November 12-15, 1996.
119. "Magnetoresistance and magnetic properties of Co/Ir multilayers on MgO(110) substrates", H. Yanagihara, K. Pettit, M.B. Salamon, E. Kita and S.S.P. Parkin, 41st Annual Conference on Magnetism and Magnetic Materials, Atlanta, Georgia, November 12-15, 1996.
120. "Correlation between GMR, magnetic moments and structure in Ni/Fe/Cu/Fe/Ni spin valves", R. Nakajima, J. Stöhr, S.S.P. Parkin, M.G. Samant and D. Weller, 41st Annual Conference on Magnetism and Magnetic Materials, Atlanta, Georgia, November 12-15, 1996.
121. "Initial interfacial roughness correlations of Fe/Au films grown on MgO(001) substrates", R. Paniago, R. Forrest, S.C. Moss, S.S.P. Parkin and D. Cookson, Symposium on *Structure and Evolution of Surfaces*, Materials Research Society Fall Meeting, Boston, Massachusetts, December 2-5, 1996.
122. "Influence of chemical composition on the epitaxy and interfacial quality of Fe/Au and Fe/Ag multilayers", R. Paniago, P.C. Chow, R. Forrest, S.C. Moss, S.S.P. Parkin and D. Cookson, Symposium on *Structure and Evolution of Surfaces*, Materials Research Society Fall Meeting, Boston, Massachusetts, December 2-5, 1996.
123. "Scanning Tunneling Spectroscopies of Magnetic Multilayers", D.K. Guthrie, P.N. First and S.S.P. Parkin, American Physical Society March Meeting, Kansas City, Missouri, March 17-21, 1997.
124. "Antiferromagnetic Coupling of Permalloy across fcc Fe(001) Interlayers", J.F. Ankner, H. Kaiser, W. Kuch and S.S.P. Parkin, American Physical Society March Meeting, Kansas City, Missouri, March 17-21, 1997.
125. "Interfacial Quality and Roughness Correlations of Fe/Au and Fe/Ag Multilayers and Films grown on MgO(001)", P.C. Chow, R. Paniago, R. Forrest, S.C. Moss, S.S.P. Parkin and D. Cookson, American Physical Society March Meeting, Kansas City, Missouri, March 17-21, 1997.
126. "Voltage dependence and the zero bias anomaly of the current-voltage characteristics in magnetic tunnel junctions", A.C. Marley and S.S.P. Parkin, American Physical Society March Meeting, Kansas City, Missouri, March 17-21, 1997.

127. "Temperature dependence of bilinear and biquadratic coupling in NiFe/Cu multilayers", K. Pettit, S.S.P. Parkin, S. Gider and M.B. Salamon, American Physical Society March Meeting, Kansas City, Missouri, March 17-21, 1997.
128. "The control of switching in magnetic tunnel junctions", S. Gider, A.C. Marley, S.S.P. Parkin and P. Kasiraj, American Physical Society March Meeting, Kansas City, Missouri, March 17-21, 1997.
129. "Magnetoresistance response in magnetic tunnel junctions", Y. Lu, R.A. Altman, S.A. Rishton, S.S.P. Parkin, A.C. Marley, S. Gider, G. Xiao and W.J. Gallagher, American Physical Society March Meeting, Kansas City, Missouri, March 17-21, 1997.
130. [Invited] "Magnetic coupling mediated by magnetic interlayers: a polarized neutron reflectivity study of permalloy/Fe superlattices", J.F. Ankner, H. Kaiser, W. Kuch and S.S.P. Parkin, American Crystallography Association, July, 1997.
131. "Magnetic and structural phases of Fe in (100)-oriented Fe/Ni multilayers", W. Kuch and S.S.P. Parkin, International Conference on Magnetic Films and Surfaces, Sunshine Coast, Queensland, Australia, August 4-8, 1997.
132. "Simulation of spin-dependent scattering in a magnetic tunnel junction system", N. Zhu and S.S.P. Parkin, The International Conference on Computational Physics: PC'97", Santa Cruz, California, August 25-28, 1997.
133. "Quenching of magnetoresistance by hot electrons in magnetic tunnel junctions", S. Zhang, P.M. Levy, A.C. Marley and S.S.P. Parkin, the 16<sup>th</sup> General Conference of the Condensed Matter Division of the European Physical Society, Leuven, Belgium, August 25-28, 1997.
134. "Control of Switching in Magnetic Tunnel Junctions", S. Gider, A. C. Marley, P. Kasiraj, and S. S. P. Parkin, American Vacuum Society 44<sup>th</sup> National Symposium, San Jose, California, October 20-24, 1997.
135. "Voltage Dependence of Magnetic Tunnel Junctions", A.C. Marley and S.S.P. Parkin, American Vacuum Society 44<sup>th</sup> National Symposium, San Jose, California, October 20-24, 1997.
136. "Wide-field Kerr characterization of magnetic tunnel junctions", P. Trouilloud, Y. Lu, D.W. Abraham, R.A. Altman, W.J. Gallagher, A.C. Marley and S.S.P. Parkin, American Vacuum Society 44<sup>th</sup> National Symposium, San Jose, California, October 20-24, 1997.
137. [Invited] "STM-based measurements of magnetic multilayers", P.N. First, D.K. Guthrie and S.S.P. Parkin, American Vacuum Society 44<sup>th</sup> National Symposium, San Jose, California, October 20-24, 1997.
138. "Uniformity of lithographically patterned magnetic tunnel junctions", P.L. Trouilloud, R.A. Altman, D.W. Abraham, W.J. Gallagher, Yu Lu, Gang Xiao, A.C. Marley and S.S.P. Parkin, 7th Joint MMM-Intermag Conference, San Francisco, California, January 6-9, 1998.
139. "Bias Voltage Dependence and Thermal Effect in Magneto-tunneling", Yu Lu, X. W. Li, Gang Xiao, W. J. Gallagher, and S.S.P. Parkin, 7th Joint MMM-Intermag Conference, San Francisco, California, January 6-9, 1998.
140. "Reduction of magnetoresistance by hot electrons in magnetic tunnel junctions", S. Zhang, P. M. Levy, A. C. Marley and S. S. P. Parkin, 7th Joint MMM-Intermag Conference, San Francisco, California, January 6-9, 1998.
141. "Magnetoresistance due to domain walls in micron scale Fe wires with stripe domains", A. D. Kent, J. Yu, U. Ruediger, S. Zhang, P. M. Levy and S. S. P. Parkin, 7th Joint MMM-Intermag Conference, San Francisco, California, January 6-9, 1998.
142. "Structure and Magneto-tunneling Properties of CoPtCr/Al<sub>2</sub>O<sub>3</sub>/Co Magnetic Tunnel Junctions", S.S.P. Parkin, Savas Gider, Bernd-Uwe Runge, Rafal Dunin-Borkowski, M. McCartney and David Smith, 7th Joint MMM-Intermag Conference, San Francisco, California, January 6-9, 1998.
143. "Magnetic coupling of permalloy across fcc Fe(001)", J.F. Ankner, H. Kaiser, W. Kuch and S.S.P. Parkin, 7th Joint MMM-Intermag Conference, San Francisco, California, January 6-9, 1998.
144. "Magnetic Properties of Epitaxially Oriented Fe and Co Nanowires", U. Ruediger, A.D. Kent and S.S.P. Parkin, American Physical Society March Meeting, Los Angeles, California, March 16-20, 1998.
145. "Magnetoresistance due to Domain Walls in Fe Wires with Controlled Stripe Domains", A.D. Kent, U. Ruediger, J. Yu, S. Zhang, P.M. Levy and S.S.P. Parkin, American Physical Society March Meeting, Los Angeles, California, March 16-20, 1998.
146. "Noise properties of magnetic tunnel junctions", E.R. Nowak, R.D. Merithew, M.B. Weissman, I. Bloom, and S.S.P. Parkin, American Physical Society March Meeting, Los Angeles, California, March 16-20, 1998.
147. "Noise measurements in magnetic tunnel junctions", S. Ingvarsson, G. Xiao, R. Altman, P. Trouilloud, Y. Lu, W.J. Gallagher, A.C. Marley, K.P. Roche and S.S.P. Parkin, American Physical Society March Meeting, Los Angeles, California, March 16-20, 1998.
148. "Measurements of magnetization switching times of micron-sized magnetic thin films", R.H. Koch, P.L. Trouilloud, R.A. Altman, Y. Lu, D.W. Abraham, W.J. Gallagher, R.E. Scheuerlein, A.C. Marley, K.P. Roche and S.S.P. Parkin, American Physical Society March Meeting, Los Angeles, California, March 16-20, 1998.

149. "Temperature and field dependence of non-collinear magnetic coupling of permalloy across fcc Fe(001) interlayers", J.F. Ankner, H. Kaiser, W. Kuch and S.S.P. Parkin, American Physical Society March Meeting, Los Angeles, California, March 16-20, 1998.
150. "Magnetoresistance of epitaxially oriented ferromagnetic nanowires", A.D. Kent, U. Ruediger, J. Yu, S. Zhang, P.M. Levy and S.S.P. Parkin, 3<sup>rd</sup> International Symposium on Metallic Multilayers (MML'98)/ EMRS Symposium on Magnetic Ultrathin Films and Ultrathin Film Nanostructures, Vancouver, Canada, June 14-19, 1998.
151. "Microstructural and micromagnetic characterization of thin film magnetic tunnel junctions", R. Dunin-Borkowski, M.R. McCartney and David J. Smith, S. Gider, B.-U. Runge and S.S.P. Parkin, 14th International Congress on Electron Microscopy, Cancun, Mexico, August 31 - September 4, 1998.
152. "Magnetic switching in sub-micron magnetic tunnel junctions", Y. Lu, P. Trouilloud, D. Abraham, R. Koch, J. Slonczewski, S. Brown, J. Bucchignano, E. O'Sullivan, R.A. Wanner, W.J. Gallagher, K.P. Roche and S.S.P. Parkin, 43<sup>rd</sup> Annual Conference on Magnetism and Magnetic Materials (MMM98), Miami, Florida, November 9-12, 1998.
153. "Uniformity and barrier dependence in lithographically patterned magnetic tunnel junctions", P.L. Trouilloud, R.A. Wanner, D.W. Abraham, S.L. Brown, W.J. Gallagher, Y. Lu, G. Xiao, K.P. Roche, A. Marley and S.S.P. Parkin, 43<sup>rd</sup> Annual Conference on Magnetism and Magnetic Materials (MMM98), Miami, Florida, November 9-12, 1998.
154. "Electronic noise in magnetic tunnel junctions", S. Ingvarsson, G. Xiao, R. Altman, P. Trouilloud, Y. Lu, K.P. Roche and S.S.P. Parkin, 43<sup>rd</sup> Annual Conference on Magnetism and Magnetic Materials (MMM98), Miami, Florida, November 9-12, 1998.
155. "Scattering of conduction electrons by impurities in GMR spin-valve structures", T.R. McGuire and S.S.P. Parkin, 43<sup>rd</sup> Annual Conference on Magnetism and Magnetic Materials (MMM98), Miami, Florida, November 9-12, 1998.
156. "Magnetoresistance due to Domain Wall GMR and AMR in Epitaxial Co Microstructures", U. Ruediger, J. Yu, A. D. Kent and S. S. P. Parkin, 43<sup>rd</sup> Annual Conference on Magnetism and Magnetic Materials (MMM98), Miami, Florida, November 9-12, 1998.
157. "Microstructural characterization of thin film magnetic tunnel junctions", R. Dunin-Borkowski, M.R. McCartney, David J. Smith, B.-U. Runge, S. Gider and S.S.P. Parkin, 43<sup>rd</sup> Annual Conference on Magnetism and Magnetic Materials (MMM98), Miami, Florida, November 9-12, 1998.
158. "Micromagnetics of Mesoscopic Epitaxial (110) Fe Elements with Nanoshaped Ends", J. Yu, U. Ruediger, A. D. Kent, L. Thomas and S. S. P. Parkin, 43<sup>rd</sup> Annual Conference on Magnetism and Magnetic Materials (MMM98), Miami, Florida, November 9-12, 1998.
159. "Observation of magnetic switching in sub-micron magnetic tunnel junctions at dc frequency", Y. Lu, P. Trouilloud, D. Abraham, R. Koch, J. Slonczewski, S. Brown, J. Bucchignano, E. O'Sullivan, R. Altman, W. Gallagher, K. Roche and S.S.P. Parkin, 43<sup>rd</sup> Annual Conference on Magnetism and Magnetic Materials (MMM98), Miami, Florida, November 9-12, 1998.
160. [Invited] "Magnetoresistance and micromagnetics of lithographically patterned epitaxial Fe wires", A.D. Kent, U. Ruediger, J. Yu and S.S.P. Parkin, 43<sup>rd</sup> Annual Conference on Magnetism and Magnetic Materials (MMM98), Miami, Florida, November 9-12, 1998.
161. "Spin polarization of 3d transition metal ferromagnets probed by superconducting tunneling spectroscopy", D. Monsma and S.S.P. Parkin, American Physical Society Centennial March Meeting, Atlanta, Georgia, March 20-26, 1999.
162. "Micromagnetics of sub-micron iron particles", L. Thomas, S.S.P. Parkin, J. Yu, U. Ruediger and A.D. Kent, American Physical Society Centennial March Meeting, Atlanta, Georgia, March 20-26, 1999.
163. "Magnetic and transport properties of CrO<sub>2</sub> epitaxial thin films", X.W. Li, A. Gupta, T.R. McGuire, G. Xiao, L. Thomas and S.S.P. Parkin, American Physical Society Centennial March Meeting, Atlanta, Georgia, March 20-26, 1999.
164. "Electrical noise in hysteretic ferromagnet-insulator-ferromagnet tunnel junctions", E.R. Nowak, M.B. Weissman and S.S.P. Parkin, American Physical Society Centennial March Meeting, Atlanta, Georgia, March 20-26, 1999.
165. "Electronic transport in ferromagnetic thin film microstructures with stripe domains", A.D. Kent, U. Ruediger, J. Yu, T. Kim, R.F.C. Farrow, L. Thomas and S.S.P. Parkin, American Physical Society Centennial March Meeting, Atlanta, Georgia, March 20-26, 1999.
166. "Exchange biasing in polycrystalline sub-micron thin film magnetic elements", T.W. Kim, U. Ruediger, A.D. Kent and S.S.P. Parkin, American Physical Society Centennial March Meeting, Atlanta, Georgia, March 20-26, 1999.

167. "Thermal activation from metastable states of submicron-sized magnetic thin films", R.H. Koch, G.M. Grinstein, E.J. O'Sullivan, S.L. Brown, J.J. Bucchignano, M.J. Rooks, D.W. Abraham, P.L. Trouilloud, Yu Lu, W.J. Gallagher, R.E. Scheuerlein, K.P. Roche and S.S.P. Parkin, American Physical Society Centennial March Meeting, Atlanta, Georgia, March 20-26, 1999.
168. "Magnetic Switching Field Distribution in Magnetic Tunneling Junctions", A. Anguelouch, B.D. Schrag, S.T. Ingvarsson, Gang Xiao, R. Wanner, P. Trouilloud, Yu Lu, W.J. Gallagher, A. Marley, K.P. Roche and S.S.P. Parkin, American Physical Society Centennial March Meeting, Atlanta, Georgia, March 20-26, 1999.
169. "Thickness determination of plasma oxidized Al<sub>2</sub>O<sub>3</sub> films for spin-dependent tunneling junctions", Wei Zhu, Carol J. Hirschmugl, Alan. D. Laine, Boris Sinkovic and Stuart S. Parkin, American Physical Society Centennial March Meeting, Atlanta, Georgia, March 20-26, 1999.
170. [Invited] "High Performance Demonstration of Magnetic Tunnel Junction Random Access Memory", W.J. Gallagher, S.L. Brown, Yu Lu, E.J. O'Sullivan, P.L. Trouilloud, D.W. Abraham, J. Bucchignano, R.H. Koch, R. Robbertazzi, M. Rooks, J. Yoon, R.A. Wanner, S.S.P. Parkin, K.P. Roche, M.G. Samant, P.M. Rice and R.B. Beyers, R.E. Scheuerlein, American Vacuum Society, 46<sup>th</sup> International Symposium, Seattle, Washington, October 25-29, 1999.
171. [Invited] "Magnetic Microstructure of Buried Ferromagnets and NiO(100) Surfaces", M. R. Scheinfein, M. R. McCartney, R. E. Dunin-Borkowski, D. J. Smith, J. Stohr, R.L. White, S.S.P. Parkin, S. Gider, A. Scholl, S. Anders, J. Luning, H. A. Padmore and T. Regan, 44<sup>th</sup> Annual Conference on Magnetism and Magnetic Materials (MMM99), San Jose, California, November 15-18, 1999.
172. [Invited] "Thermally assisted switching in sub-micron thin magnetic films", R.H. Koch, G.A. Keefe, G.M. Grinstein, Y. Lu, P.L. Trouilloud, W.J. Gallagher and S.S.P. Parkin, 44<sup>th</sup> Annual Conference on Magnetism and Magnetic Materials (MMM99), San Jose, California, November 15-18, 1999.
173. [Invited] "High Performance Demonstration of Magnetic Tunnel Junction Random Access Memory", R.E. Scheuerlein, W.J. Gallagher, S.L. Brown, Yu Lu, E.J. O'Sullivan, P.L. Trouilloud, D.W. Abraham, J.J. Bucchignano, R.H. Koch, Y.H. Lee, R.B. Robbertazzi, M.J. Rooks, J. Yoon, R.A. Wanner, S.S.P. Parkin, K.P. Roche, M.G. Samant, P.M. Rice and A. Lee, 44<sup>th</sup> Annual Conference on Magnetism and Magnetic Materials (MMM99), San Jose, California, November 15-18, 1999.
174. "Analysis of electron spin polarization at high bias voltage using tunnel spin-valve transistors", D.J. Monsma and S.S.P. Parkin, 44<sup>th</sup> Annual Conference on Magnetism and Magnetic Materials (MMM99), San Jose, California, November 15-18, 1999.
175. "On the exchange biasing through a non-magnetic spacer layer", L. Thomas, A. Kellock and S.S.P. Parkin, 44<sup>th</sup> Annual Conference on Magnetism and Magnetic Materials (MMM99), San Jose, California, November 15-18, 1999.
176. "Thermal stability of magnetic tunnel junctions for magnetic random access memory applications", M. Samant, P. Rice, S.S.P. Parkin, Y. Lu, S. Brown, P. Trouilloud, E. O'Sullivan and W. Gallagher, 44<sup>th</sup> Annual Conference on Magnetism and Magnetic Materials (MMM99), San Jose, California, November 15-18, 1999.
177. "Effect of Shape Variation on Magnetic Tunnel Junction Switching Characteristics", David W. Abraham, R. Koch, P. Trouilloud, Y. Lu, R. Wanner, S.L. Brown, E. O'Sullivan, W.J. Gallagher, P.M. Rice and S.S.P. Parkin, 44<sup>th</sup> Annual Conference on Magnetism and Magnetic Materials (MMM99), San Jose, California, November 15-18, 1999.
178. "Magnetic Noise in Micron-size Magnetic Tunnel Junctions", S. Ingvarsson, G. Xiao, R. Wanner, P. Trouilloud, Yu Lu, W. J. Gallagher and S. S. P. Parkin, 44<sup>th</sup> Annual Conference on Magnetism and Magnetic Materials (MMM99), San Jose, California, November 15-18, 1999.
179. "Two-dimensional Magnetic Switching and Interlayer Couplings in Tunnel Junctions", B. D. Schrag, A. Anguelouch, G. Xiao, R. Wanner, P. Trouilloud, Yu Lu, W.J. Gallagher, K. P. Roche, and S. S. P. Parkin, 44<sup>th</sup> Annual Conference on Magnetism and Magnetic Materials (MMM99), San Jose, California, November 15-18, 1999.
180. "Quasi-static magnetic switching and magnetic coupling in exchange biased magnetic-tunnel-junctions", Yu Lu, P. L. Trouilloud, D. Abraham, R. Koch, J. Slonczewski, S. Brown, J. Bucchignano, E. O'Sullivan, R. A. Wanner, W. J. Gallagher and S. S. P. Parkin, 44<sup>th</sup> Annual Conference on Magnetism and Magnetic Materials (MMM99), San Jose, California, November 15-18, 1999.
181. "Spin waves in magnetic tunnel junctions", M.A. Lucena, S.M. Rezende, A. Azevedo, F.M. de Aguiar and S.S.P. Parkin, 44<sup>th</sup> Annual Conference on Magnetism and Magnetic Materials (MMM99), San Jose, California, November 15-18, 1999.
182. "Magnetotransport and magnetic properties of molecular beam epitaxial FePt thin films", J. Yu, U. Ruediger, A.D. Kent, R.F.C. Farrow, R.F. Marks, D. Weller, L. Folks and S.S.P. Parkin, 44<sup>th</sup> Annual Conference on Magnetism and Magnetic Materials (MMM99), San Jose, California, November 15-18, 1999.

183. "Exchange biasing in polycrystalline thin film nanostructures", J. Yu, A.D. Kent and S.S.P. Parkin, 44<sup>th</sup> Annual Conference on Magnetism and Magnetic Materials (MMM99), San Jose, California, November 15-18, 1999.
184. "XPEEM study of demagnetization processes in a magnetic tunnel junction", J. Luning, L. Thomas, S.S.P. Parkin, J. Stohr, A. Scholl, F. Nolting and S. Anders, 44<sup>th</sup> Annual Conference on Magnetism and Magnetic Materials (MMM99), San Jose, California, November 15-18, 1999.
185. [Invited] "Sub-10ns Read and Write Time Non-Volatile Memory Array Using a Magnetic Tunnel Junction and FET Switch in each Cell", Roy Scheuerlein, William Gallagher, Stuart Parkin, Alex Lee, Sam Ray, Ray Robertazzi, William Reohr, Yong Lu, IEEE International Solid-State Circuits Conference, February 2000.
186. "Magnetic noise in micron-size magnetic tunnel junctions", Snorri Ingvarsson, Gang Xiao, S.S.P. Parkin, R. Wanner, P. Trouilloud, Yu Lu, W.J. Gallagher and R.H. Koch, American Physical Society March Meeting, Minneapolis, Minnesota, March 20-24, 2000.
187. "Calculation of giant magnetoresistance from first-principles", W. H. Butler, T. C. Schulthess, X.-G. Zhang, J. M. MacLaren and S. S. P. Parkin, American Physical Society March Meeting, Minneapolis, Minnesota, March 20-24, 2000.
188. "Interface stability in hybrid transition metal/oxide magnetic trilayer junctions", J.Z. Sun, K.P. Roche and S.S.P. Parkin, Materials Research Society Spring Meeting, San Francisco, April 2000.
189. [Invited] "TEM in support of industrial research", P.M. Rice, S.S.P. Parkin, R.F.C. Farrow, M. Moore and W.J. Gallagher, Materials Research Society Spring Meeting, San Francisco, April 24-27, 2000.
190. [Invited] "High performance demonstration of magnetic tunnel junction random access memory", W.J. Gallagher, S.L. Brown, Y. Lu, E.J. O'Sullivan, P.L. Trouilloud, D.W. Abraham, J. Bucchignano, R.H. Koch, Y.H. Lee, R. Robertazzi, M. Rooks, J. Yoon, R.A. Wanner, S.S.P. Parkin, K.P. Roche, M.G. Samant, P.M. Rice and R.E. Scheuerlein, Symposium on Magnetic Materials, Structures, and Processing for Information Storage, Materials Research Society Spring Meeting, San Francisco, April 24-27, 2000.
191. "Electron tunneling and noise studies in ferromagnetic junctions", E.R. Nowak, P. Stradling, M.B. Weissman and S.S.P. Parkin, International Conference on Metallurgical Coatings and Thin Films (ICMCTF), San Diego, California, April 10-14, 2000.
192. "High resolution imaging of MRAM devices switching using photoemission electron microscopy", D.W. Abraham, S. Anders, J. Hummel, W.J. Gallagher, E. O'Sullivan and S.S.P. Parkin, 8th Joint MMM-Intermag Conference, San Antonio, Texas, January 8-11, 2001.
193. "Conducting Tip Atomic Force Microscope Studies of Ferromagnetic Tunnel Junctions", B. Oezylmaz, I. Roshchin, A. D. Kent and S.S.P. Parkin, 8th Joint MMM-Intermag Conference, San Antonio, Texas, January 8-11, 2001.
194. "Field dependent reversal modes in exchange-spring thin films determined by combining torque magnetometry and micromagnetic modeling", S. David, S.S.P. Parkin, E. E. Fullerton, C. Platt, A. Berkowitz, J. S. Jiang and S. D. Bader, 8th Joint MMM-Intermag Conference, San Antonio, Texas, January 8-11, 2001.
195. "Pulsed and dc magnetization reversal asteroids in sub-micron magnetic thin films", R.H.Koch, G. Grinstein, P. Trouilloud, Y. Lu, W.J. Gallagher and S.S.P. Parkin, 8th Joint MMM-Intermag Conference, San Antonio, Texas, January 8-11, 2001.
196. "Thermal activation-induced reduction of magnetic switching field in sub-micron magnetic junctions", J.Z. Sun, J.C. Slonczewski, P.L. Trouilloud, D. Abraham, I. Bacchus, W.J. Gallagher, J. Hummel, Y. Lu, G. Wright and S.S.P. Parkin, 8th Joint MMM-Intermag Conference, San Antonio, Texas, January 8-11, 2001.
197. "Influence of Cu and Ni nano-interface layers on magnetic tunnel junction properties", M.G. Samant, S.S.P. Parkin, J. Luning and J. Stohr, 8th Joint MMM-Intermag Conference, San Antonio, Texas, January 8-11, 2001.
198. "Study of unshielded longitudinally stabilized magnetic tunnel junction read sensors", M.K. Ho, C.H. Tsang, R.E. Fontana, K.J. Carey, T. Pan and S.S.P. Parkin, 8th Joint MMM-Intermag Conference, San Antonio, Texas, January 8-11, 2001.
199. "Perpendicular exchange bias of Co/Pt multilayers", S. Maat, Eric E. Fullerton, K. Takano, S. S. P. Parkin, March Meeting of the American Physical Society, Seattle, Washington, March 12-16, 2001.
200. "Temperature and Bias Effects in Inverse Tunneling Magnetoresistance Structures", A. Panchula and S.S.P. Parkin, March Meeting of the American Physical Society, Seattle, Washington, March 12-16, 2001.
201. [Invited] "Phase instabilities in MBE-grown, ultrathin Fe- oxide films", R.F.C. Farrow, R.F. Marks, A.F. Panchula, S.S.P. Parkin, P.M. Rice, M.F. Toney, K.A. Hannibal and A.J. Kellock, European Materials Research Society Spring Meeting, Symposium N-Ultrathin Epitaxial Oxides, Strasbourg, France, June 5-8, 2001.
202. "Spin dependent electron scattering in GaAs based magnetic tunnel transistors", S. van Dijken, X. Jiang and S.S.P. Parkin, 46th Conference on Magnetism and Magnetic Materials, Seattle, Washington, November 12-16, 2001.

203. "Relationship of spin polarization and magnetization for various Co and CoFe alloys", C. Kaiser, S. van Dijken and S.S.P. Parkin, 46th Conference on Magnetism and Magnetic Materials, Seattle, Washington, November 12-16, 2001.
204. "Domain wall induced coupling in hard-soft magnetic tunnel junctions", L. Thomas, J Lüning, A. Scholl, F. Nolting, S. Anders, J. Stöhr and S.S.P. Parkin, 46th Conference on Magnetism and Magnetic Materials, Seattle, Washington, November 12-16, 2001.
205. [Invited] "Magnetic Tunnel Junctions and Architectures for their use in Magnetic Random Access Memories", W.J. Gallagher, S.S.P. Parkin *et al.*, 46th Conference on Magnetism and Magnetic Materials, Seattle, Washington, November 12-16, 2001.
206. "Spin-Dependent Hot Electron Transport in Ni<sub>81</sub>Fe<sub>19</sub> and Co<sub>84</sub>Fe<sub>16</sub> Thin Films on GaAs(001)", Xin Jiang, Sebastiaan van Dijken and Stuart S. P. Parkin, American Physical Society March Meeting, Indianapolis, Indiana, March 18-22, 2002.
207. "Magnetic Characterization of Ultra-Thin Fe<sub>3</sub>O<sub>4</sub> Films Used in MTJs", R.P. Sears, B. Sinkovic and S.S.P. Parkin, American Physical Society March Meeting, Indianapolis, Indiana, March 18-22, 2002.
208. "Depth Dependence of Exchange Bias in Fe/NiO(x)Å/CoO/NiO(500-x)Å Films", R.P. Sears, B.T.W. Taylor, B. Sinkovic and S.S.P. Parkin, American Physical Society March Meeting, Indianapolis, Indiana, March 18-22, 2002.
209. "Voltage dependence of Inverse Tunneling Magnetoresistance", Alex F. Panchula, Christian Kaiser and Stuart S. P. Parkin, American Physical Society March Meeting, Indianapolis, Indiana, March 18-22, 2002.
210. "Relationship of spin polarization and magnetization for various Co and Fe alloys" Christian Kaiser and Stuart S.P. Parkin, American Physical Society March Meeting, Indianapolis, Indiana, March 18-22, 2002.
211. "Role of interface layers on Tunneling Magnetoresistance", See-Hun Yang, Mahesh Samant and Stuart S. P. Parkin, American Physical Society March Meeting, Indianapolis, Indiana, March 18-22, 2002.
212. "Giant Magnetocurrent in Spin-Valve-Based Magnetic Tunnel Transistors", Sebastiaan van Dijken, Xin Jiang and Stuart S.P. Parkin, American Physical Society March Meeting, Indianapolis, Indiana, March 18-22, 2002.
213. "Exchange anisotropy and spin-wave damping in CoFe/IrMn bilayers", S.M. Rezende, M.A. Lucena, A. Azevedo and F.M. de Aguiar, J.R. Fermin and S.S.P. Parkin, 47<sup>th</sup> Conference on Magnetism and Magnetic Materials, Tampa, Florida, November 11-15, 2002.
214. "Thermal magnetization fluctuations in magnetic tunnel junction based memory cells scaled to sub-100 nm dimensions", V. Korenivski, R. Leuschner, M. Rooks, E. O'Sullivan, P. Trouilloud, S. Parkin, G. Mueller, and W. Gallagher, 47<sup>th</sup> Conference on Magnetism and Magnetic Materials, Tampa, Florida, November 11-15, 2002.
215. "A 0.18 micron Logic-based MRAM Technology Customizable for High Performance or High Density Nonvolatile Memory Applications", A.R. Sitaram, D.W. Abraham, A. Bette, S. Brown, G. Costrini, F. Findeis, M. Gaidis, W. Glashauser, D. Gogl, A. Gupta, H. Hönigschmid, B. Hughes, J. Hummel, S. Kanakasabapathy, I. Kasko, W. Kim, U. Klostermann, G.Y. Lee, K.-S. Low, Yu Lu, J. Nützel, C. Park, S.S.P. Parkin, W. Raberg, W. Reohr, R. Robertazzi, M. Samant, C. Sarma, J. Schmid, G. Stojakovic, P.L. Trouilloud, D. Worledge, W.J. Gallagher and G. Müller, IEDM, San Francisco, California, December 9-11, 2002.
216. "Probing the composition, electronic, and magnetic structures of magnetic multilayer structures with spectroscopy excited by soft x-ray standing waves", See-Hun Yang, Stuart Parkin, Bongjin Mun, Norman Mannella, Stephenie Ritchey, Brian Sell, Long Pham, Charles Fadley and Akira Nambu, March Meeting of the American Physical Society, Austin, Texas, March 3-7, 2003.
217. "Magnetic Tunnel Junctions with a Doped Fe<sub>3</sub>O<sub>4</sub> Electrode", Alex F. Panchula and Stuart S. P. Parkin, March Meeting of the American Physical Society, Austin, Texas, March 3-7, 2003.
218. "The influence of the seed and spacer layer material on the giant magnetocurrent in magnetic tunnel transistors with a spin valve base" Sebastiaan van Dijken, Xin Jiang, Stuart S.P. Parkin, March Meeting of the American Physical Society, Austin, Texas, March 3-7, 2003.
219. "Bias Voltage Dependence of Magnetocurrent in Magnetic Tunnel Transistors with GaAs and Si Collectors", Xin Jiang, Sebastiaan van Dijken, Roger Wang and Stuart Parkin, March Meeting of the American Physical Society, Austin, Texas, March 3-7, 2003.
220. "Hot Electron Spin Injection into GaAs using a Magnetic Tunnel Transistor with InGaAs Quantum Well Optical Detection", Roger Wang, Xin Jiang, Sebastiaan van Dijken, Robert Shelby, Roger MacFarlane, Stuart Parkin, Glenn Solomon and James Harris, March Meeting of the American Physical Society, Austin, Texas, March 3-7, 2003.
221. [Invited] "TEM characterization for magnetic nano structure processing", P.M. Rice, R.E. Fontana, J.R. Childress, E.E. Marinero and S.S.P. Parkin, 2003 IEEE International Magnetism Conference, Boston, March 30-April 3, 2003.



- 222.[Invited] “Magnetic Tunnel Junctions – principles and applications”, Mahesh G. Samant and Stuart Parkin, 6<sup>th</sup> International Symposium on Sputtering & Plasma Processes (ISSP 2003), Kanazawa, Japan Jun 11-13, 2003.
223. “Experimental test of macroscopic models for exchange anisotropy in AF/FM bilayers”, S.M. Rezende, A. Azevedo, F.M. de Aguiar, M.A. Lucena, J.R. Fermin, and S.S.P. Parkin, International Conf. on Magnetism (ICM 2003), Rome, Italy, July 27- August 1, 2003.
224. “High-Speed 128Kbit MRAM Core in a 0.18 $\mu$ m CMOS Technology Utilizing PtMn-based Magnetic Tunnel Junctions”, W.J. Gallagher and S.S.P. Parkin, Non-Volatile Memory technology Symposium 2003 (NVMTS2003), San Diego, California, November 12-13, 2003.
225. “Optical Detection of Spin Injection into GaAs from Magnetic Tunnel Transistor Injectors”, X. Jiang, R. Wang, S. van Dijken, R. Shelby, R. Macfarlane, G. Solomon, J. Harris, and S.S.P. Parkin, 9th Joint MMM/INTERMAG Conference, Anaheim, California, January 5-9, 2004.
226. “Magnetic Tunnel Junctions with a ZnSe Barrier”, X. Jiang, A. F. Panchula, and S.S.P. Parkin, 9th Joint MMM/INTERMAG Conference, Anaheim, California, January 5-9, 2004.
227. “Tunnel Spin Injectors for Semiconductor Spintronics”, X. Jiang, R. Wang, S. van Dijken, R. Shelby, R. Macfarlane, S. Bank, G. Solomon, J. Harris, and S.S.P. Parkin, IBM-Stanford SpinAPS meeting, Asilomar, California, July 2004
228. “Current-Induced Domain Wall Motion in Nanowires”, Luc Thomas, Masamitsu Hayashi, Maxim Tsoi, Charles Rettner, and Stuart Parkin, 9th joint MMM/Intermag conference, Anaheim California, January 5-9, 2004.
229. [Invited] “Current-Induced Domain Wall Motion in Magnetic Nanowires”, Luc Thomas, Maxim Tsoi, Charles Rettner and Stuart Parkin, SPIE Photonics West 2004, San Jose, California, January 24-29, 2004.
230. “Spin Injection from ferromagnetic tunnel injectors in quantum well structures at high temperatures”, Roger Wang, Xin Jiang, Robert Shelby, Roger MacFarlane, Seth Bank, Glenn Solomon, James Harris and Stuart Parkin, American Physical Society March Meeting, Montreal, Canada, March 22-26, 2004.
231. “Structural and Magnetic Properties of Cr-doped InN Films grown by Plasma –Assisted MBE”, Rekha Rajaram, Glenn Solomon, R F.C. Farrow, J.S. Harris, Jr., S.S.P. Parkin, 46<sup>th</sup> Electronic Materials Conference, Notre Dame, Indiana, June 23-25, 2004.
232. “Current induced domain wall motion in magnetic nanowires”, Masamitsu Hayashi, Luc Thomas, Charles Rettner, Xin Jiang and Stuart Parkin, 5<sup>th</sup> International Symposium on Metallic Multilayers, Boulder, Colorado, June 7-11, 2004.
233. “Probing buried magnetic interfaces with standing wave photoemission and x-ray emission”, S.-H. Yang, B.S. Mun, N. Mannella, M. Watanabe, L. D. Pham, B. C. Sell, S.B. Ritchey, A. Nambu, F. Salmassi, J.B. Kortright, S.S.P. Parkin, and C.S. Fadley, Workshop on Magnetic Nanostructures, Interfaces, and New Materials: Theory, Experiment, and Applications, ALS Users Meeting, October, 2004.
234. “Standing-wave excited XES and RIXS: new tools for buried interface studies”, M. Watanabe, L. D. Pham, S.-H. Yang, B.S. Mun, N. Mannella, B.C. Sell, S.B. Ritchey, A. Nambu, F. Salmassi, J. Guo, J.B. Kortright, S.S.P. Parkin, and C.S. Fadley, Workshop on Photon-In and Photon-Out X-Ray Spectroscopy, ALS User Meeting, October, 2004.
235. “Current-induced heating in spin valve nanowires”, Luc Thomas, Masamitsu Hayashi, Charles Rettner, Xin Jiang, and Stuart Parkin, 49th Conference on Magnetism and Magnetic Materials, Jacksonville, Florida, November 7-11, 2004.
236. “Current-Driven Domain Wall Motion in Nanowires”, Luc Thomas, Masamitsu Hayashi, Charles Rettner, Xin Jiang, and Stuart Parkin, 49th Conference on Magnetism and Magnetic Materials, Jacksonville, Florida, November 7-11, 2004.
237. “Exploring the metastable states of a magnetic domain wall trapped at a notch in permalloy nanowires”, Luc Thomas, Masamitsu Hayashi, Charles Rettner, Xin Jiang, and Stuart Parkin, 49th Conference on Magnetism and Magnetic Materials, Jacksonville, Florida, November 7-11, 2004.
238. “High spin polarization from zero moment Co-Gd ferromagnetic alloys”, C. Kaiser, Alex F. Panchula and S.S.P. Parkin, 49th Conference on Magnetism and Magnetic Materials, Jacksonville, Florida, November 7-11, 2004.
239. “Bias voltage dependence of the tunneling magneto-resistance of SrTiO<sub>3</sub> based magnetic tunnel junctions grown epitaxially on Si (100)”, Guenole Jan, Mahesh Samant, Andreas Ney, Kevin Roche and S.S.P. Parkin, March Meeting of the American Physical Society, Los Angeles, California, March 21-25, 2005.
240. “Current-driven excitations in symmetric magnetic nanopillars”, M. Tsoi, J. Z. Sun and S.S.P. Parkin, March Meeting of the American Physical Society, Los Angeles, California, March 21-25, 2005.
241. “Buried-interface characterization in magnetic nanostructures using standing wave-excited x-ray emission and resonant inelastic x-ray”, Masamitsu Watanabe, Brian Sell, See-Hun Yang, Bongjin Mun, Norman Mannella, Long Pham, Stephenie Ritchey, Akira Nambu, Farhad Salmassi, Jinghua Guo, Jeffrey Kortright, S.S.P. Parkin

- and Charles Fadley, March Meeting of the American Physical Society, Los Angeles, California, March 21-25, 2005.
242. "Diluted Magnetic Semiconductors based on Cr-doped InN", Rekha Rajaram, A Ney, R.F.C. Farrow, J.S. Harris, Jr. and S.S.P. Parkin, March Meeting of the American Physical Society, Los Angeles, California, March 21-25, 2005.
  243. "Dependence of giant tunneling magnetoresistance in MgO based magnetic tunnel junctions on the structure of Co electrodes", See-Hun Yang, Mahesh Samant and S.S.P. Parkin, March Meeting of the American Physical Society, Los Angeles, California, March 21-25, 2005.
  244. "Characterization of Magnetic Tunnel Junctions by IETS and STS", Hyunsoo Yang, Christian Kaiser, See-Hun Yang and Stuart Parkin, March Meeting of the American Physical Society, Los Angeles, California, March 21-25, 2005.
  245. "Perpendicularly magnetized exchange-biased magnetic tunnel", Andreas Ney, Sebastiaan van Dijken and Stuart Parkin, March Meeting of the American Physical Society, Los Angeles, California, March 21-25, 2005.
  246. "Spin injection from CoFe/MgO tunnel injectors into GaAs", Roger Wang, Xin Jiang, Robert Shelby, Seth Bank, James Harris and Stuart Parkin, March Meeting of the American Physical Society, Los Angeles, California, March 21-25, 2005.
  247. "Spin-transfer torque driven de-pinning of a domain-wall in a magnetic nano-wire", Luc Thomas, Masamitsu Hayashi, Xin Jiang, Rai Moriya, Charles Rettner and Stuart Parkin, March Meeting of the American Physical Society, Los Angeles, California, March 21-25, 2005.
  248. "Current-Driven Domain Wall Motion in Permalloy Nanowires", Masamitsu Hayashi, Luc Thomas, Charles Rettner, Xin Jiang, Rai Moriya and Stuart Parkin, March Meeting of the American Physical Society, Los Angeles, California, March 21-25, 2005.
  249. "Kondo resonance in magnetic double tunnel junctions", Hyunsoo Yang, See-Hun Yang, Christian Kaiser and Stuart Parkin, International Magnetism Conference, Intermag 2005, Nagoya, Japan, April 4-8, 2005.
  250. [Invited] "Recent Advances in MRAM Technology", W.J. Gallagher, D. Abraham, S. Assefa, S.L. Brown, J. DeBrosse, M. Gaidis, E. Galligan, E. Gow, B. Hughes, J. Hummel, S. Kanakasabapathy, C. Kaiser, M. Lamorey, T. Maffit, K. Milkove, Yu Lu, J. Nowak, P. Rice, M. Samant, E. O'Sullivan, S.S.P. Parkin, R. Robertazzi, P. Trouilloud, D. Worledge, G. Wright, and See-Hun Yang, 2005 IEEE VLSI-TSA International Symposium on VLSI Technology, Hsinchu, Taiwan, April 25-27, 2005.
  251. "Comparison of Structural and Magnetic properties of Cr-doped InN films grown on c-Sapphire and on 111 GaAs by plasma-MBE", R. Rajaram, A. Ney, R.F.C. Farrow, J.S. Harris and S.S.P. Parkin, North American MBE conference, Santa Barbara, September, 2005.
  252. "Real Time Observation of Domain Wall Motion in Permalloy Nanowires", Masamitsu Hayashi, Luc Thomas, Charles Rettner, Rai Moriya, Xin Jiang and Stuart Parkin, 50<sup>th</sup> Conference on Magnetism and Magnetic Materials, San Jose, California, October 30- November 3, 2005.
  253. "Spin polarization of tunneling current from ferromagnet/MgO tunnel junctions with a NbN superconducting detector" Hyunsoo Yang, See-hun Yang, Christian Kaiser, and Stuart Parkin, 50<sup>th</sup> Conference on Magnetism and Magnetic Materials, San Jose, California, October 30- November 3, 2005.
  254. "Competition between Kondo effect and superconductivity in magnetic double tunnel junctions", Hyunsoo Yang, See-Hun Yang, Christian Kaiser and Stuart Parkin, 50<sup>th</sup> Conference on Magnetism and Magnetic Materials, San Jose, California, October 30- November 3, 2005.
  255. "Current induced oscillations in probability of domain wall motion in magnetic nanowires", Luc Thomas, Masamitsu Hayashi, Xin Jiang, Rai Moriya, Charles Rettner and Stuart Parkin, 50<sup>th</sup> Conference on Magnetism and Magnetic Materials, San Jose, California, October 30- November 3, 2005.
  256. "Nonlinear regimes of current-induced domain wall motion", Ya. B. Bazaliy, M. Hayashi, A. Joura, B. A. Jones, S. S. P. Parkin, American Physical Society March Meeting, Baltimore, Maryland, March 13-17, 2006.
  257. "Effect of Coulomb interaction on the spin-galvanic mode in a two dimensional electron gas with Rashba spin-orbit interaction", Y.B. Bazaliy, B.V. Bazaliy, G. Guntherodt, and S.S.P. Parkin, American Physical Society March Meeting, Baltimore, Maryland, March 13-17, 2006.
  258. "High sensitivity of tunneling spin polarization to chemical bonding of transition metal ferromagnetic alloys at interface with insulating barrier", See-Hun Yang, Hyunsoo Yang, Christian Kaiser, Stuart S. P. Parkin, American Physical Society March Meeting, Baltimore, Maryland, March 13-17, 2006.
  259. [Invited] "Tunneling spin polarization in planar tunnel junctions: measurements using NbN superconducting electrodes and evidence for Kondo-assisted tunneling", Hyunsoo Yang, American Physical Society March Meeting, Baltimore, Maryland, March 13-17, 2006.

260. "Spin polarization measurements of  $\text{Co}_{1-x}\text{Pt}_x$  alloys by point contact Andreev reflection spectroscopy", M. Faiz, R. Panguluri, B. Nadgorny, C. Kaiser, and S.S.P. Parkin, American Physical Society March Meeting, Baltimore, Maryland, March 13-17, 2006.
261. "Spin Transfer Induced Magnetization Switching in  $\text{CoGd|Cu|CoFe}$  Spin Valve" L. Gao, X. Jiang, J. Z. Sun, and S. S. P. Parkin, IEEE International Magnetism Conference, San Diego, California, May 8-12, 2006.
262. "Oscillatory dependence of current driven domain wall motion on current pulse length", L. Thomas, M. Hayashi, X. Jiang, R. Moriya, C. Rettner and S.S.P. Parkin, IEEE International Magnetism Conference, San Diego, California, May 8-12, 2006.
263. "Resonant inversion of tunneling magnetoresistance using  $\text{MgO/NiO}$  barriers", H. Yang, S. Yang, C. Kaiser and S.S.P. Parkin, IEEE International Magnetism Conference, San Diego, California, May 8-12, 2006.
264. "Influence of magnetic structure on field and current driven domain wall depinning in magnetic nanowires", M. Hayashi, L. Thomas, C. Rettner, X. Jiang, R. Moriya and S. S. P. Parkin, 19<sup>th</sup> International Colloquium on Magnetic Films and Surfaces (ICMFS) 2006, Sendai, Japan, August 15 - 18, 2006.
265. "Influence of current and field on the velocity of domain walls in permalloy nanowires", M. Hayashi, L. Thomas, Ya. B. Bazaliy, C. Rettner, R. Moriya, X. Jiang and S. S. P. Parkin, International Conference on Magnetism ICM2006, Kyoto, Japan, August 20-25, 2006.
266. [Invited] "Oscillatory pulse length dependence of the depinning probability of domain walls driven by short current pulses", L. Thomas, M. Hayashi, X. Jiang, R. Moriya, C. Rettner and S.S.P. Parkin, International Workshop on Spin Transfer (IWST 2006), Nancy, France, October 2-4, 2006.
267. "Electronic structure of sputter deposited  $\text{MgO}(100)$  tunnel barriers in magnetic tunnel junction structures exhibiting giant tunneling magnetoresistance", S.-H. Yang, M. Samant and S.S.P. Parkin, American Physical Society March Meeting, Denver, Colorado, March 5-9, 2007.
268. "Spin injection and imbalance in ferromagnet/ superconductor/ ferromagnet double tunnel junctions" H. Yang, S.-H. Yang and S.S.P. Parkin, American Physical Society March Meeting, Denver, Colorado, March 5-9, 2007.
269. [Invited] "Highly Efficient Room Temperature Spin Injection Using Spin Filtering in  $\text{MgO}$ ", X. Jiang, American Physical Society March Meeting, Denver, Colorado, March 5-9, 2007.
270. "Spin polarization in  $\text{Co-Pt}$  alloys", J. Pulikkotil, V. Antropov, R. Panguluri, B. Nadgorny, C. Kaiser and S.S.P. Parkin, American Physical Society March Meeting, Denver, Colorado, March 5-9, 2007.
271. "Current induced resonance of vortex domain wall in permalloy nanowires", R. Moriya, L. Thomas, M. Hayashi, X. Jiang, C. Rettner, and S.S.P. Parkin, American Physical Society March Meeting, Denver, Colorado, March 5-9, 2007.
272. [Invited] "Oscillatory dependence of current driven domain wall motion on current pulse length", L. Thomas, American Physical Society March Meeting, Denver, Colorado, March 5-9, 2007.
273. "Coherent precession of propagating domain walls in permalloy nanowires", M. Hayashi, L. Thomas, C. Rettner, R. Moriya and S.S.P. Parkin, American Physical Society March Meeting, Denver, Colorado, March 5-9, 2007.
274. "Temperature dependence of current induced magnetization switching in spin-valves with a ferrimagnetic  $\text{CoGd}$  free layer", L. Gao, X. Jiang, J. Sun, S.S.P. Parkin, American Physical Society March Meeting, Denver, Colorado, March 5-9, 2007.
275. "Pump-probe magneto-optical Kerr measurements of domain-wall dynamics in magnetic nanowires", B. Bergman, R. Moriya, X. Jiang, M. Hayashi, L. Thomas, B. Koopmans and S.S.P. Parkin, Fourth International School and Conference on Spintronics and Quantum Information Technology (Spintech IV), Maui, Hawaii, June 17-22, 2007.
276. [Invited] "Materials and Systems Challenges for Femto-Tesla Magnetoresistive Thin-Film Sensors", W.F. Egelhoff and R. McMichael, A. Edelstein, E. Nowak and S.S.P. Parkin, 2007 Meeting of the Military Sensing Symposia (MSS) Specialty Group on Battlefield Acoustic & Seismic Sensing, Magnetic & Electric Field Sensors, The Johns Hopkins University, Laurel, Maryland, August 21-23, 2007.
277. [Invited] "Controlled dynamics of magnetic domain walls in permalloy nanowires using spin-polarized current and magnetic field", M. Hayashi, L. Thomas, C. Rettner, R. Moriya, Y.B. Bazaliy, X. Jiang, B. Bergman, B. Hughes and S.S.P. Parkin, 52<sup>nd</sup> Magnetism and Magnetic Materials Conference, Tampa, Florida, November 5-9, 2007.
278. "Transferring spin signals in carbon nanotube networks through  $\text{MgO}$  tunnel barriers", H. Yang, R. Moriya, C. Yang, C. Rettner, M. Itkis, S.S.P. Parkin and R.C. Haddon, 52<sup>nd</sup> Magnetism and Magnetic Materials Conference, Tampa, Florida, November 5-9, 2007.
279. "Ultrafast Generation of a Giant Magnetic Anisotropy Induced by Electric Fields", S.J. Gamble, M.H. Burkhardt, H. Siegmann, J. Stöhr, A. Kashuba, R. Allenspach and S.S.P. Parkin, 52<sup>nd</sup> Magnetism and Magnetic Materials Conference, Tampa, Florida, November 5-9, 2007.

280. "Challenges for sub-picoTesla Magnetic-Tunnel-Junction Sensors", W.F. Egelhoff, R.D. McMichael, A.S. Edelstein, E.R. Nowak and S.S.P. Parkin, 52<sup>nd</sup> Magnetism and Magnetic Materials Conference, Tampa, Florida, November 5-9, 2007.
281. [Invited] "Current-driven domain wall dynamics in magnetic nanowires", L. Thomas, M. Hayashi, R. Moriya, X. Jiang, B. Bergman, C. Rettner, B. Hughes, S.S.P. Parkin, Materials Research Society Fall Meeting, Boston, Massachusetts, November 26-30, 2007.
282. "Influence of spin accumulation on superconducting properties of aluminum layers in magnetic double tunnel junction devices", S.-H. Yang, H. Yang, S. Takahashi, S. Maekawa and S.S.P. Parkin, 2008 March Meeting of the American Physical Society, New Orleans, Louisiana, March 10-14<sup>th</sup>, 2008.
283. "Enhanced tunneling spin polarization by amorphizing usually crystalline CoFe alloys without any glass forming additives", L. Gao, X. Jiang, S.-H. Yang, P.M. Rice and S.S.P. Parkin, 2008 March Meeting of the American Physical Society, New Orleans, Louisiana, March 10-14<sup>th</sup>, 2008.
284. "Stochastic magnetic field driven domain wall motion in a spin-valve nanowire", X. Jiang, L. Thomas, R. Moriya, M. Hayashi, B. Bergman, C. Rettner, and S. S. P. Parkin, INTERMAG 2008, Madrid, Spain, May 4-8, 2008.
285. [Invited] "Current-driven domain wall dynamics in magnetic nanowires", L. Thomas, M. Hayashi, R. Moriya, X. Jiang, B. Bergman, C. Rettner, B. Hughes and S. S. P. Parkin, 2008 Spintronics Symposium, SPIE Optics and Photonics, San Diego, California, August 26-30, 2008.
286. [Invited] "Probing vortex core dynamics using current induced resonant excitation of a trapped domain wall", Rai Moriya, Luc Thomas, Masamitsu Hayashi, Yaroslav B. Bazaliy, Charles Rettner, and Stuart S. P. Parkin, 53<sup>rd</sup> Magnetism and Magnetic Materials Conference, Austin, Texas, November 10-14, 2008.
287. "Controlled motion of multiple domain walls in permalloy nanowires", M. Hayashi, L. Thomas, R. Moriya, C. Rettner, X. Jiang, B. Bergman and S.S.P. Parkin, 53<sup>rd</sup> Magnetism and Magnetic Materials Conference, Austin, Texas, November 10-14, 2008.
288. "Modification of the Electronic Structure of a Ferromagnet in Extreme Terahertz Fields", S.J. Gamble, M.H. Burkhardt, A. Kashuba, R. Allenspach, S.S.P. Parkin, H.C. Siegmann and J. Stöhr, 53<sup>rd</sup> Magnetism and Magnetic Materials Conference, Austin, Texas, November 10-14, 2008.
289. "Dependence of the current induced magnetization excitations on the free layer thickness in MgO based magnetic tunnel junctions", L. Gao, M. Hayashi, R. Moriya, C. Rettner and S.S.P. Parkin, 53<sup>rd</sup> Magnetism and Magnetic Materials Conference, Austin, Texas, November 10-14, 2008.
290. [Invited] "Spin transfer driven dynamics of magnetic domain walls in magnetic nanowires", Masamitsu Hayashi, Luc Thomas, Rai Moriya, Charles Rettner, Xin Jiang, Bastiaan Bergman, Brian Hughes, See-hun Yang and Stuart S. P. Parkin, International Workshop on Magnetization Dynamics, NanoSpinics Laboratory, Seoul National University, Seoul, Korea, December 7-10, 2008.
291. [Invited] "Magnetization dynamics and domain wall motion in magnetic nanostructures", Masamitsu Hayashi, Yukawa Workshop on "Spin Transport in Condensed Matter", organized by the Yukawa Institute for Theoretical Physics, Kyoto, Japan, mid October to mid November, 2008.
292. [Invited] "Spin Transfer Driven Dynamics of Magnetic Domain Walls in Magnetic Nanowires", Masamitsu Hayashi, Luc Thomas, Rai Moriya, Charles Rettner, Xin Jiang, Bastiaan Bergman, Brian Hughes, See-hun Yang, and Stuart S. P. Parkin, Asian Magnetism Conference, Busan, Korea, December 10-13, 2008.
293. [Invited] GMAG Outstanding Dissertation in Magnetism Award Lecture] "Spin-dependent tunneling effects in magnetic tunnel junctions", Li Gao, 2009 March Meeting of the American Physical Society, Pittsburgh, Pennsylvania, March 16-20, 2009.
294. "Role of defects in the interfacial conductivity at interfaces in Pt/ Sr-TiO<sub>3</sub>/Pt heterostructures", Naga Phani Aetukuri, Guenole Jan, M. Samant, K.P. Roche and S.S.P. Parkin, 2009 March Meeting of the American Physical Society, Pittsburgh, Pennsylvania, March 16-20, 2009.
295. "Nitrogen doping in single-crystal MgO magnetic tunnel junctions", Justin Brockman, Cheng-Han Yang, M. Samant, K. Roche and S.S.P. Parkin, 2009 March Meeting of the American Physical Society, Pittsburgh, Pennsylvania, March 16-20, 2009.
296. "Ferromagnetism in MgO by Nitrogen Doping", Cheng-Han Yang, M. Samant and S.S.P. Parkin, 2009 March Meeting of the American Physical Society, Pittsburgh, Pennsylvania, March 16-20, 2009.
297. [Invited] "Spin-Transfer-Driven Reversal in Magnetic Tunnel Junctions: Torques, Dynamics, and Thermal Activation Effects", J. Z. Sun, M. C. Gaidis, G. Hu, Y. F. Guan, E. J. O'Sullivan, S. L. Brown, J. J. Nowak, P. L. Trouilloud, D. C. Worledge, Xin Jiang, R. Moriya, and S. S. P. Parkin, Intermag 2009, Sacramento, California, May 4-8, 2009.
298. "How can polarized neutron reflectometry help us understand phantom magnetism?", M.R. Fitzsimmons, M. Zhernenkov, J. Olamit, N. Hengartner, J. Chlistunoff, J. Majewski, A. Sharoni, Ivan K. Schuller, I. Tudosa,

- E.E. Fullerton, J. Garcia-Barriocanal, F.Y. Bruno, J. Santamaria, M.G. Samant, Stuart S.P. Parkin, B. Roberts, K. Krishnan, 20<sup>th</sup> International Colloquium on Magnetic Films and Surfaces (ICMFS), Berlin, Germany, July 20-24, 2009.
299. [Invited] “TEM and Atom Probe Tomography Characterization of High TMR MgO-Based Magnetic Tunnel Junctions”, P.M. Rice, S.-H. Yang, S.S.P. Parkin, E.A. Marquis, T.J. Prosa, D.J. Larson, Microscopy & Microanalysis 2009 Meeting Microscopy & Microanalysis 2009 Meeting, Richmond Virginia, USA, July 26-30, 2009.
300. [Invited] “High power microwave emission from nanoscale MgO based magnetic tunnel junctions”, Li Gao, SPIE Optics + Photonics Conference, San Diego, California, USA, August 2-6, 2009.
301. [Invited] “Spin injection into a superconductor in a magnetic double tunnel junction”, Saburo Takahashi, Sadamichi Maekawa, Hyunsoo Yang, See-Hun Yang, and Stuart Parkin, 4th international workshop on Spin Currents, Sendai, Japan, Feb 8-10, 2010.
302. “Magnetic coupling across various spacer layers probed by ferromagnetic resonance”, See-Hun Yang, M. Hayashi, L. Gao and S.S.P. Parkin, 2010 March Meeting of the American Physical Society, Portland, Oregon, March 15-19, 2010.
303. “Time resolved measurements for voltage induced metal-insulator-transition in VO<sub>2</sub> nanostructures”, Li Gao, Xin Jiang, See-Hun Yang, Masamitsu Hayashi, Rai Moriya and Stuart S. P. Parkin, 2010 March Meeting of the American Physical Society, Portland, Oregon, March 15-19, 2010.
304. “Spin torque switching of magnetic tunnel junctions with perpendicularly magnetized Co/Ni and Co/Pd electrodes”, Xin Jiang, Brian Hughes and Stuart Parkin, 2010 March Meeting of the American Physical Society, Portland, Oregon, March 15-19, 2010.
305. “Novel Resistive Switching in MgO with Nitrogen Doping”, Cheng-Han Yang, Xin Jiang, Mahesh Samant, Brian Hughes, Li Gao, Andrew Kellock and Stuart Parkin, 2010 March Meeting of the American Physical Society, Portland, Oregon, March 15-19, 2010.
306. “Gilbert damping in perpendicularly oriented [Co/Ni]<sub>n</sub> multilayers”, Hyonseok Song, Kyeong-Dong Lee, Jeong-Woo Sohn and Sung-Chul Shin, See-Hun Yang and Stuart S.P. Parkin, 2nd International Symposium on Advanced Magnetic Materials and Applications (ISAMMA 2010), Sendai, Japan, July 12-16, 2010.
307. [Invited] “Current controlled motion of domain walls in magnetic racetracks”, Luc Thomas, Rai Moriya, Masamitsu Hayashi, Xin Jiang, Brian Hughes, Charles Rettner and Stuart Parkin, IEEE 7<sup>th</sup> International Symposium on Metallic Multilayers (MML2010), Berkeley, California, September 19-24, 2010.
308. [Invited] “Tunable multifunctional topological insulators in ternary Heusler and related compounds”, Claudia Felser, Stanislav Chadov, Siham Ouardi, Gerhard H. Fecher, Lukas Muechler, Shan Rong, Jürgen Kübler, G. Jakob, Shou-Cheng Zhang, Hai-Jun Zhang, Binghai Yan, Xiao-Liang Qi and Stuart Parkin, Spring Meeting of the German Physical Society, Dresden, Germany, March 13-18, 2011.
309. “Investigation of current induced domain wall motion in Co/Ni nanowires with perpendicular magnetic anisotropy”, Ding-Shuo Wang, Luc Thomas, Ching-Hsiang Tsai, See-Hun Yang, Brian Hughes, Charles Rettner, Chih-Huang Lai and Stuart Parkin, American Physical Society March Meeting 2011, Dallas, Texas, March 21-25, 2011.
310. “Dependence of Gilbert damping on number of bilayers in perpendicularly magnetized Co/Ni multilayers”, See-Hun Yang, Weifeng Zhang, Hyonseok Song, Sung-Chul Shin, Markus Haertinger, Georg Woltersdorf, Christian Back and Stuart Parkin, American Physical Society March Meeting 2011, Dallas, Texas, March 21-25, 2011.
311. “Thin film growth and characterization of full Heusler alloys Rh<sub>2-x</sub>Co<sub>x</sub>FeSn and RhCoMnSn”, Li Gao, Mingyang Li, Brian P. Hughes, Kevin P. Roche, Mahesh G. Samant, Claudia Felser, and Stuart S. P. Parkin, American Physical Society March Meeting 2011, Dallas, Texas, March 21-25, 2011.
312. “Electric field-induced breakdown of the Mott insulating state in V<sub>2</sub>O<sub>3</sub> nanostructures”, Justin Brockman, Li Gao, Nagaphani Aetukuri, Brian Hughes, Charles Rettner, Mahesh Samant, Kevin Roche, Stuart Parkin, American Physical Society March Meeting 2011, Dallas, Texas, March 21-25, 2011.
313. “Discrete positioning of domain walls due to localized pinning sites in current driven motion along nanowires”, Xin Jiang, Luc Thomas, Rai Moriya, and Stuart S. P. Parkin, American Physical Society March Meeting 2011, Dallas, Texas, March 21-25, 2011.
314. [Invited] “Heusler compounds for spintronics”, Claudia Felser, Tanja Graf, Stuart S. P. Parkin, 11th Symposium on “Magnetoresistive Sensors and Magnetic Systems”, Wetzlar, Germany, March 29-30, 2011.
315. “Precise positioning of trains of magnetic domain walls by current pulses in permalloy nanowires”, Luc Thomas, Rai Moriya, Brian Hughes, Charles Rettner and Stuart Parkin, IEEE International Magnetism Conference 2011 (Intermag 2011), Taipei, Taiwan, April 25-29, 2011.

316. "Microstructure and MOS Capacitor properties of  $\text{Bi}_2\text{Fe}_4\text{O}_9$  grown on  $\text{Si}(001)$ ", C. Dubourdieu, N. Aetukuri, E. Cartier, J. Bruley, J. Jordan-Sweet, T. Arruda, S. Kalinin, M. Samant, M.M. Frank, S.S.P. Parkin and V. Narayanan, ISIF, Cambridge, United Kingdom, August 1-4, 2011.
317. "Racetrack Memory Cell Array with Integrated Magnetic Tunnel Junction Readout", A. J. Annunziata, M. C. Gaidis, L. Thomas, C. W. Chien, C. C. Hung, P. Chevalier, E. J. O'Sullivan, J. P. Hummel, E. A. Joseph, Y. Zhu, T. Topuria, E. Delenia, P. M. Rice, S. S. P. Parkin, W. J. Gallagher, 2011 IEEE International Electron Devices Meeting, Washington, DC, December 5-7, 2011.
318. "Can heat flow induced spin currents move a magnetic domain wall?", A. Pushp, T. Phung, L. Thomas, K. Alexandrou, X. Jiang, S-H. Yang, B. Hughes, C. Rettner and S.S.P. Parkin, APS March Meeting 2012, Boston, Massachusetts, February 27-March 2, 2012.
319. "Thin film deposition of  $\text{Mn}_2\text{Ga}$  under various growth condition", M. Li, L. Gao, X. Jiang, M. Samant, B. Hughes, K. Roche, C. Felser and S.S.P. Parkin", APS March Meeting 2012, Boston, Massachusetts, February 27-March 2, 2012.
320. "Origin of perpendicular magnetic anisotropy in Co/Ni multilayers on Ti layer", S.H. Yang, Kuei-Hung Shen, L. Thomas and S.S.P. Parkin, APS March Meeting 2012, Boston, Massachusetts, February 27-March 2, 2012.
321. "Reduction in critical current for domain wall injection by ion irradiation of perpendicular magnetic anisotropy nanowires", T. Phung, L. Thomas, S.-H. Yang, C. Rettner, K.-S. Ryu, J. Baglin, B. Hughes and S.S.P. Parkin, APS March Meeting 2012, Boston, Massachusetts, February 27-March 2, 2012.
322. [Invited] "Domain wall motion driven by current in magnetic nanowires with perpendicular anisotropy", Luc Thomas, See-Hun Yang, Kwang-Su Ryu, Timothy Phung, and Stuart S. P. Parkin, SPIE Optics + Photonics 2012, San Diego, California, August 12-16, 2012.
323. [Invited] "Nanomagnetic logic", David Carlton, Brian Lambson, Zheng Gu, Scott Dhuey, Li Gao, Brian Hughes, Deirdre Olynick, Charles Rettner, Andreas Scholl, Brian Youngblood, Anthony Young, Ilya Krivorotov, Stuart Parkin, Jeffrey Bokor, SPIE Optics + Photonics 2012, San Diego, California, August 12-16, 2012.
324. "Ferromagnetic resonance study on  $\text{Fe}_3\text{O}_4$  thin film", J.G.Lin, M. Y. Song, J. W. Lin, Mahesh Samant and S.S.P. Parkin, 12<sup>th</sup> Joint MMM-Intermag Conference, Chicago, Illinois, January 14-18, 2013.
325. "Topologically robust sorting of chiral magnetic domain walls", T. Phung, A. Pushp, C. Rettner, B. Hughes, S. Yang, L. Thomas and S.S.P. Parkin, 12<sup>th</sup> Joint MMM-Intermag Conference, Chicago, Illinois, January 14-18, 2013.
326. "In-line Domain wall injection in perpendicularly magnetized Co/Ni nanowires using a static  $90^\circ$  DW fabricated by local ion irradiation", T. Phung, A. Pushp, L. Thomas, S. Yang, C. Rettner, K. Ryu, J. Baglin, B. Hughes and S.S.P. Parkin, 12<sup>th</sup> Joint MMM-Intermag Conference, Chicago, Illinois, January 14-18, 2013.
327. "Chirality control of vortex domain walls in magnetic nanowires", A. Pushp, T. Phung, C. Rettner, B. Hughes, S. Yang, L. Thomas and S.S.P. Parkin, 12<sup>th</sup> Joint MMM-Intermag Conference, Chicago, Illinois, January 14-18, 2013.
328. "The role of interface magnetic centers on the spin lifetime measured in doped  $\text{SrTiO}_3$  using Hanle technique", Wei Han, X. Jiang, Adam Kajdos, See-Hun Yang, Susanne Stemmer and Stuart S.P. Parkin, APS March Meeting 2013, Baltimore, Maryland, March 18- 22, 2013.
329. "Spin Hall Effect induced Anisotropic Magnetoresistance", Priscila Gonzalez-Barba, See-Hun Yang, L. Thomas, K.S. Ryu, S.S.P. Parkin and A. Manchon, APS March Meeting 2013, Baltimore, Maryland, March 18- 22, 2013.
330. "Strain-dependent Metal-Insulator Transition in  $\text{VO}_2$  single-crystalline thin films", Naga Phani Aetukuri, A. Gray, M. Cossale, M. Drouard, L. Gao, H. Durr, M. Samant and S.S.P. Parkin, APS March Meeting 2013, Baltimore, Maryland, March 18- 22, 2013.
331. "The field-effect in vanadium dioxide and the metal-insulator transition", Koen Martens, Jaewoo Jeong, N. Aetukuri, C. Rettner, L. Gao, B. Hughes, K. Roche, M. Samant and S.S.P. Parkin, APS March Meeting 2013, Baltimore, Maryland, March 18- 22, 2013.
332. "Reliability of Signal Propagation in Magnetostatically Coupled Arrays of Magnetic Nanoelements", R. van Mourik, L. Gao, B. Hughes, C. Rettner, B. Koopmans and S.S.P. Parkin, APS March Meeting 2013, Baltimore, Maryland, March 18- 22, 2013.
333. "Domain Wall Trajectory Determined by its Fractional Topological Edge Defects", A. Pushp, T. Phung, C. Rettner, B. Hughes, S-H. Yang, L. Thomas and S.S.P. Parkin, APS March Meeting 2013, Baltimore, Maryland, March 18- 22, 2013.
334. "Probing the Influence of Thermal Spin Torque on Magnetic Tunnel Junction Switching", T. Phung, A. Pushp, C. Rettner, B. Hughes, S-H. Yang and S.S.P. Parkin, APS March Meeting 2013, Baltimore, Maryland, March 18- 22, 2013.
335. [Invited] "Materials advances in perpendicularly magnetized  $\text{MgO}$ -tunnel junctions for STT-MRAM", D. C. Worledge, S. L. Brown, W. Chen, J. Harms, G. Hu, R. Kilaru, W. Kula, G. Lauer, L. Q. Liu, J. Nowak, S. S. P.

- Parkin, A. Pushp, S. Murthy, R. P. Robertazzi, G. Sandhu, J. Z. Sun, 58<sup>th</sup> Annual Conference on Magnetism and Magnetic Materials, Denver, Colorado, November 4-8, 2013.
336. "Observation of resonant modes of coupled DWs", Timothy Phung, Aakash Pushp, Charles Rettner, Brian Hughes, See-Hun Yang, and Stuart S.P. Parkin, APS March Meeting 2014, Denver, Colorado, March 3-7, 2014.
  337. "Temperature Dependence of the Spin Hall Effect in Perpendicularly Magnetized Magnetic Materials", Shuoying Yang, Weifeng Zhang, Salvatore Mesoraca, Aakash Pushp, Timothy Phung, See-hun Yang, X. M. Cheng, and Stuart S.P. Parkin, APS March Meeting 2014, Denver, Colorado, March 3-7, 2014.
  338. "Dependence of the spin Hall effect in platinum / ferromagnet bilayers on the composition of the ferromagnet", Weifeng Zhang, Wei Han, Xin Jiang and Stuart Parkin, APS March Meeting 2014, Denver, Colorado, March 3-7, 2014.
  339. "Electric field-induced carrier accumulation at the vanadium dioxide - dielectric interface", K. Martens, J.-W. Jeong, N. Aetukuri, C. Rettner, L. Gao, D.N. Esfahani, F.M Peeters, J. Van De Vondel, V.V. Moshchalkov, M. Samant, and S.S.P. Parkin, APS March Meeting 2014, Denver, Colorado, March 3-7, 2014.
  340. [Invited] "Domain Wall Trajectory Determined by its Fractional Topological Edge Defects", Aakash Pushp, Timothy Phung, C.T. Rettner, B.P. Hughes, S.-H. Yang, and S.S.P. Parkin, APS March Meeting 2014, Denver, Colorado, March 3-7, 2014.
  341. [Invited] A simple and highly efficient in-line magnetic domain wall injector (Invited Paper), Timothy Phung, Aakash Pushp, Luc Thomas, Charles T. Rettner, See-Hun Yang, Kwang-Su Ryu, John Baglin, Brian Hughes, Stuart S. P. Parkin, SPIE 2014, San Diego, California, August 17-21, 2014.
  342. "Observation of Skyrmions in Mn-Pt-Sn based Heusler material", Ajaya Kumar Nayak, Roshnee Sahoo, Johannes Wild, Daniel Ebke, Josef Zweck, Stuart Parkin, Claudia Felser, APS March Meeting 2015, San Antonio, Texas, March 2-6, 2015.
  343. Investigation of the structural and magnetic properties of MBE-grown Cr-doped Bi<sub>2</sub>Se<sub>3</sub> thin films", Liam Collins-McIntyre, Piet Schoenherr, Shilei Zhang, Alexander Baker, Adriana Figueroa, Giannantonio Cibin, Gerrit van der Laan, Nina-Juliana Steinke, Christy Kinane, Timothy Charlton, Diego Alba-Venero, Sean Langridge, Aakash Pushp, Andy Kellock, Stuart Parkin, Sara Harrison, James Harris, Thorsten Hesjedal, APS March Meeting 2015, San Antonio, Texas, March 2-6, 2015.
  344. Giannantonio Cibin, Gerrit van der, Nina-Juliana, Christy Kinane, Timothy Charlton, Diego Alba-Venero, Sean Langridge, Akash Pushp, Andy Kellock, Stuart Parkin, Sara Harrison, James Harris and Thorsten Hesjedal, APS March Meeting 2015, San Antonio, Texas, March 2-6, 2015.
  345. "Giant thermal spin torque assisted magnetic tunnel junction switching", Aakash Pushp, Timothy Phung, Charles Rettner, Brian Hughes, See-Hun Yang, and Stuart Parkin, APS March Meeting 2015, San Antonio, Texas, March 2-6, 2015.
  346. "Planar Hall effect (PHE), anisotropy magnetoresistance (AMR), and anomalous Hall effect (AHE) in perpendicularly magnetized synthetic ferromagnets", See-Hun Yang, Priscila Barba, Aurelien Manchon, and Stuart Parkin, APS March Meeting 2015, San Antonio, Texas, March 2-6, 2015.
  347. "Extraordinary Inhibition of the Field-effect by Bound Quasiparticles at the Interface of a Dielectric and the Metal-Insulator Transition Material VO<sub>2</sub>", Koen Martens, Jaewoo Jeong, Nagaphani Aetukuri, Charles Rettner, Nikhil Shukla, Eugene Freeman, Davoud Esfahani, Francois Peeters, Teya Topuria, Phil Rice, Alexander Volodin, Benoit Douhard, Wilfried Vandervorst, Mahesh Samant, Suman Datta, and Stuart Parkin, APS March Meeting 2015, San Antonio, Texas, March 2-6, 2015.
  348. "Probing the Reversible Changes in Electronic Structure Induced by Liquid Electrolyte Gating in WO<sub>3</sub> Thin Films by Hard X-ray Photoelectron Spectroscopy", Julie Karel, Carlos Viol Barbosa, Simone Altendorf, Janos Kiss, Yuki Utsumi, Mahesh Samant, Liu Hao Tjeng, Claudia Felser, and Stuart Parkin, APS March Meeting 2015, San Antonio, Texas, March 2-6, 2015.
  349. "Investigation of the effects of the metal-insulator transition of Vanadium sesquioxide onto a proximity coupled ferromagnetic thin film", Andrea Fantini, Benjamin Madon, Aakash Pushp, Pengfa Xu, Jaewoo Jeong, Yari Ferrante, Simone Altendorf, Timothy Phung, and Stuart Parkin, APS March Meeting 2015, San Antonio, Texas, March 2-6, 2015.
  350. "Role of transparency of platinum-ferromagnet interface in determining intrinsic magnitude of spin Hall effect", Weifeng Zhang, Wei Han, Xin Jiang, See-hun Yang, and Stuart Parkin, APS March Meeting 2015, San Antonio, Texas, March 2-6, 2015.
  351. [Invited] "Non-collinear magnetism and spontaneous skyrmion in Heusler materials", A.K. Nayak, J. Wild, J. Zweck, S.S.P. Parkin and C. Felser, MMM/ Intermag Joint Conference, San Diego, California, January 11-15, 2016.

352. “Spin Torque Ferromagnetic Resonance in Heusler based Magnetic Tunnel Junctions”, J. Zhang, T. Phung, A. Pushp, J. Jeong, Y. Ferrante, C. Rettner, B.P. Hughes, S. Yang, and S.S.P. Parkin, MMM/ Intermag Joint Conference, San Diego, California, January 11-15, 2016.
353. “Current induced domain wall motion along electron flow in ferromagnetic Pt/Co/Ni/Co/Pt wires”, K. Ryu, S. Yang, L. Thomas and S.S.P. Parkin, MMM/ Intermag Joint Conference, San Diego, California, January 11-15, 2016.
354. “Sorting domains in a perpendicularly magnetized racetrack biperplexer”, A. Pushp, C. Garg, T. Phung, B.P. Hughes, C. Rettner, S. Yang and S.S.P. Parkin, MMM/ Intermag Joint Conference, San Diego, California, January 11-15, 2016.
355. “Domain wall dynamics driven by novel combination of exchange coupling torque with chiral spin torque in synthetic antiferromagnets”, S. Yang, C. Garg, C. Rettner, and S.S.P. Parkin, MMM/ Intermag Joint Conference, San Diego, California, January 11-15, 2016.
356. “Spin orbit torques in  $W:O_2$ ”, T. Phung, K. Demasius, W. Zhang, B.P. Hughes, S. Yang, A. Kellock, W. Han, A. Pushp, T. Topuria, Y. Ferrante, E. Delenia, and S.S.P. Parkin, MMM/ Intermag Joint Conference, San Diego, California, January 11-15, 2016.
357. Towards Ultrafast Control of Conductivity and Electronic Correlations in Vanadium Dioxide. A.X. Gray, J. Jeong, N. Aetukuri, E. Arenholz, M. Hoffmann, M. Samant, R. Averitt, K. Nelson, S.S.P. Parkin and H. Durr, MMM/ Intermag Joint Conference, San Diego, California, January 11-15, 2016.
358. “Tetragonal Heusler thin films for spintronic applications”, J. Jeong, Y. Ferrante, M. Samant, and S.S.P. Parkin, MMM/ Intermag Joint Conference, San Diego, California, January 11-15, 2016.
359. “Determining the intrinsic damping from time-resolved precession decay measurement in perpendicularly magnetized thin films using an analytical approach”, A. Capua, S. Yang, T. Phung, and S.S.P. Parkin, MMM/ Intermag Joint Conference, San Diego, California, January 11-15, 2016.
360. “Harnessing the shallow magnetization energy barrier for efficient nonlinear high harmonics generation in perpendicularly magnetized ultrathin CoFeB films”, A. Capua, C. Rettner, and S.S.P. Parkin, MMM/ Intermag Joint Conference, San Diego, California, January 11-15, 2016.
361. “Current driven asymmetric domain wall propagation”, C. Garg, A. Pushp, T. Phung, B.P. Hughes, C. Rettner, S. Yang, and S.S.P. Parkin, MMM/ Intermag Joint Conference, San Diego, California, January 11-15, 2016.
362. “Observation of Rabi nutations in a ferromagnet”, A. Capua and S.S.P. Parkin, MMM/ Intermag Joint Conference, San Diego, California, January 11-15, 2016.
363. “Role of transparency of platinum-ferromagnet interface in determining intrinsic magnitude of spin hall effect”, W. Zhang, W. Han, X. Jiang, S. Yang and S.S.P. Parkin, MMM/ Intermag Joint Conference, San Diego, California, January 11-15, 2016.
364. “Rabi nutations in a ferromagnetic film”, Amir Capua, Charles Rettner, and Stuart Parkin, APS March Meeting 2016, Baltimore, Maryland, March 14-16, 2016.
365. “Ultrafast reflectance of photoexcited Weyl and Dirac semimetals TaAs and ZrSiS”, Christopher Weber, Bryan Berggren, Keshav Dani, Mazhar Ali, Stuart Parkin, Leslie Schoop, Bettina Lotsch, Lingxiao Zhao, and Genfu Chen, APS March Meeting 2016, Baltimore, Maryland, March 14-16, 2016.
366. “Dirac Cone Protected by Non-Symmorphic Symmetry and highly dispersive 3D Dirac crossings in ZrSiS”, Leslie Schoop, Mazhar Ali, Carola Strasser, Viola Duppel, Stuart Parkin, Bettina Lotsch, and Christian Ast, APS March Meeting 2016, Baltimore, Maryland, March 14-16, 2016.
367. “Angular Magnetoresistance and Hall Measurements in New Dirac Material, ZrSiS”, Mazhar Ali, Leslie Schoop, Bettina Lotsch, Stuart Parkin, APS March Meeting 2016, Baltimore, Maryland, March 14-16, 2016.
368. “Enhanced spin orbit torques by oxygen incorporation in tungsten films”, Timothy Phung, Kai-Uwe Demasius, Weifeng Zhang, Brian P. Hughes, See-Hun Yang, Andrew Kellock, Wei Han, Aakash Pushp, and Stuart S. P. Parkin, APS March Meeting 2016, Baltimore, Maryland, March 14-16, 2016.
369. “Spin torque ferromagnetic resonance in Heusler based magnetic tunnel junctions”, Jie Zhang, Timothy Phung, Aakash Pushp, Jaewoo Jeong, Yari Ferrante, Charles Rettner, Brian P. Hughes, See-Hun Yang, and Stuart S.P. Parkin, APS March Meeting 2016, Baltimore, Maryland, March 14-16, 2016.
370. “Current driven asymmetric domain wall propagation”, Chirag Garg, Aakash Pushp, Timothy Phung, See-Hun Yang Brian P. Hughes, Charles Rettner, and Stuart S.P. Parkin, APS March Meeting 2016, Baltimore, Maryland, March 14-16, 2016.
371. “Photoinducing the hidden M2 phase in  $VO_2$ ”, D.A. Walko, R.K. Smith, Haidan Wen, A.D. DiChiara, Jaewoo Jeong, Mahensh G. Samant, and Stuart S.P. Parkin, APS March Meeting 2016, Baltimore, Maryland, March 14-16, 2016.
372. [Invited] See-Hun Yang, “Novel current driven domain wall dynamics in synthetic antiferromagnets”, APS March Meeting 2016, Baltimore, Maryland, March 14-16, 2016.



373. [Invited] Aakash Pushp, “Giant thermal spin torque assisted magnetic tunnel junction switching”, APS March Meeting 2016, Baltimore, Maryland, March 14-16, 2016.
374. [Invited] Wei Han, “Role of transparency of platinum-ferromagnet interface in determining intrinsic magnitude of spin Hall effect”, APS March Meeting 2016, Baltimore, Maryland, March 14-16, 2016.
375. “ZrSiS: A New Stable Non-Toxic 3D Dirac Semimetal”, Leslie Schoop, Mazhar Ali, Carola Strasser, Viola Duppel, Stuart S Parkin, Bettina Lotsch and Christian Ast, Materials Research Society Spring Meeting, Phenix, Arizona, March 28 – April 1, 2016.
376. “THz-Driven Ultrafast Spin-Lattice Scattering in Amorphous Metallic Ferromagnets”, Stefano Bonetti, Matthias Hoffmann, Meng-Ju Sher, Zhao Chen, Stanford University, See-hun Yang, Mahesh Samant, Stuart S.P. Parkin, APS March Meeting 2016, New Orleans, Louisiana, March 12-17, 2017.
377. “Spin orbit torques in W(O) based three terminal magnetic memory devices”, Jie Zhang, Timothy phung, Chirag Garg, Charles Rettner, Brian. P Hughes, See-hun Yang, Stuart S.P. Parkin, APS March Meeting 2016, New Orleans, Louisiana, March 12-17, 2017.
378. “Thin Films of New Fermion Material, Ta<sub>3</sub>Sb”, Mazhar Ali, See-hun Yang, James Taylor, Stuart S.P. Parkin, APS March Meeting 2016, New Orleans, Louisiana, March 12-17, 2017.
379. “Highly efficient domain wall motion in ferrimagnetic trilayers”, See-hun Yang, Chirag Garg, Stuart S.P. Parkin, APS March Meeting 2016, New Orleans, Louisiana, March 12-17, 2017.
380. “Phase-Resolved Detection of the Spin Hall Angle by Optical Ferromagnetic Resonance in Perpendicularly Magnetized Thin Films”, Amir Capua, Tianyu Wang, See-hun Yang, Charles Rettner, Timothy Phung, Stuart S.P. Parkin, APS March Meeting 2016, New Orleans, Louisiana, March 12-17, 2017.
381. “Current driven domain wall motion in ferrimagnetic Heusler thin race-tracks”, Panagiotis Filippou, Jaewoo Jeong, See-hun Yang, Yari Ferrante, Teya Topuria, Mahesh Samant, Stuart S.P. Parkin, APS March Meeting 2016, New Orleans, Louisiana, March 12-17, 2017.
382. “Probing Metal-Insulator Transitions in VO<sub>2</sub> with Ultra-Narrow Carbon Nanotube Electrodes”, Stephanie Bohaichuk, Gregory Pitner, Jaewoo Jeong, Mahesh G. Samant, Eric Pop, H.-S. Philip Wong, and Stuart S. P. Parkin, Materials Research Society Spring Meeting, Phenix, Arizona, April 17-21, 2017.
383. “Robust in-plane ferroelectricity over room temperature in atomic-thick SnTe” Kai Chang, Junwei Liu, Haicheng Lin, Na Wang, Kun Zhao, Yong Zhong, Xiaopeng Hu, Wenhui Duan, Liang Fu, Qi-Kun Xue, Xi Chen, Shuai-Hua Ji, and Stuart Parkin, DPG-Frühjahrstagung (DPG Spring Meeting), Dresden, Germany, March 19-24, 2017.
384. “Growth and characterization of NbSe<sub>2</sub> on Al<sub>2</sub>O<sub>3</sub> (0001) using molecular beam epitaxy”, Avanindra Kumar Pandeya, Kai Chang, Amilcar bedoya Pinto, Ilya Kostanovskiy, and Stuart Parkin, DPG-Frühjahrstagung (DPG Spring Meeting), Dresden, Germany, March 19-24, 2017.
385. “Cognitive computing with mem-circuits”, Alessandro Fumarola and Stuart Parkin, DPG-Frühjahrstagung (DPG Spring Meeting), Dresden, Germany, March 19-24, 2017.
386. “Giant anomalous Hall effect in Heusler compounds”, Kaustuv Manna, Rolf Stinshoff, Ting-Hui Kao, Nitesh Kumar, Chandra Shekhar, Jayita Nayak, Sunil Wilfred DSouza, Sanjay Singh, Gerhard H. Fecher, Stuart S. P. Parkin, and Claudia Felser, DPG-Frühjahrstagung (DPG Spring Meeting), Dresden, Germany, March 19-24, 2017.
387. “Efficient Current Induced Motion of Chiral Domain Walls”, Robin Bläing, Tianping Ma, Chirag Garg, Tom Lichtenberg, See-Hun Yang, Ilya Kostanovskiy, and Stuart Parkin, DPG-Frühjahrstagung (DPG Spring Meeting), Dresden, Germany, March 19-24, 2017.
388. “Control of helical spin order in Fe nanoislands”, Jeison A. Fischer, Leonid Sandratskii, Dirk Sander, and Stuart Parkin, DPG-Frühjahrstagung (DPG Spring Meeting), Dresden, Germany, March 19-24, 2017.
389. “Compensated magnetic state in tetragonal thin films for antiferromagnetic spintronics”, Roshnee Sahoo, Ajaya K. Nayak, Lukas Wollmann, Stuart Parkin, and Claudia Felser, DPG-Frühjahrstagung (DPG Spring Meeting), Dresden, Germany, March 19-24, 2017.
390. “Growth, structural characterisation and magnetotransport measurements in Mn<sub>3</sub>Ir thin-films”, James M Taylor, Edouard Lesne, Fasil Kidane Dejene, Claudia Felser, and Stuart S. P. Parkin, DPG-Frühjahrstagung (DPG Spring Meeting), Dresden, Germany, March 19-24, 2017.
391. “Multiple Dirac cones at the surface of the topological metal LaBi”, Jayita Nayak, Shu-Chun Wu, Nitesh Kumar, Chandra Shekhar, Sanjay Singh, Jörg Fink, Emile E. D. Rienks, Gerhard H. Fecher, Stuart S. P. Parkin, Binghai Yan, and Claudia Felser, DPG-Frühjahrstagung (DPG Spring Meeting), Dresden, Germany, March 19-24, 2017.
392. “Probing Metal-Insulator Transitions in VO<sub>2</sub> with Ultra-Narrow Carbon Nanotube Electrodes”, Stephanie Bohaichuk, Gregory Pitner, Jaewoo Jeong, Mahesh G. Samant, Eric Pop, H.-S. Philip Wong, and Stuart S. P. Parkin, 2017 MRS Spring Meeting, Phoenix, Arizona, April 17-21, 2017.

393. “Combinatorial thin film deposition system for the rapid exploration of engineered spintronic materials”, Andriy Styervoyedov, Pierre-Jean Zermatten and Stuart Parkin, 5th Magnetron Ion processing & Arc Technologies European Conference (MIATEC). Nice, France, June 26-30, 2017.
394. “Hinge states in SnTe”, Z. Wang, F. Schindler, A. Cook, M. Vergniory, S.S.P. Parkin, A. Bernevig and T. Neupert, American Physical Society, Los Angeles, California, USA, March 5-9, 2018..
395. “Large Intrinsic Spin Hall Effect in the A15 Superconductor Family: A Topology and Symmetry based Design Strategy”, Y. Sun, E. Derunova, S.S.P. Parkin, B. Yan and M. Ali, American Physical Society, Los Angeles, California, USA, March 5-9, 2018.
396. “Extremely high conductivity in the unconventional triple point fermion material MoP”, C. Shekhar, Y. Sun, N. Kumar, J. Gooth, M. Nicklas, S. Watzman, K. Manna, V. Suess, L. Muechler, T. Förster, W. Schnelle, U. Zeitler, B. Yan, S.S.P. Parkin and C. Felser, American Physical Society, Los Angeles, California, USA, March 5-9, 2018.
397. “Electronic transport in Layered van der Waals Kagome lattice Cluster Compound, Nb<sub>3</sub>X<sub>8</sub>”, J. Yoon, E. Lesne, J. Sheckelton, C. Pasco, T. McQueen, S.S.P. Parkin and M. Ali, American Physical Society, Los Angeles, California, USA, March 5-9, 2018.
398. “MBE Grown Bismuth Thin Films for Hydrodynamic Transport Studies”, S.-Y. Yang, K. Chang, K.G. Rana and S.S.P. Parkin, American Physical Society, Los Angeles, California, USA, March 5-9, 2018.
399. “Directly photoexcited Dirac fermions in ZrSiS and NbAs, and their femtosecond dynamics”, C. Weber, J. Kim, E. Arushanov, A. Nateprov, L. Schoop, B. Lotsch, S.S.P. Parkin and M. Ali, American Physical Society, Los Angeles, California, USA, March 5-9, 2018.
400. “Influence of Interplay of Volume and Interface Spin Transfer Torques Affecting Current Induced Domain Wall Transport in Atomically Engineered Multilayered Racetracks”, P. Filippou, J. Jeong, Y. Ferrante, S.-H. Yang, M. Samant, T. Topuria and S.S.P. Parkin, American Physical Society, Los Angeles, California, USA, March 5-9, 2018.
401. “Link between Intrinsic Spin Hall Effect and Geometrical Curvature of the Fermi Surface”, E. Derunova, Y. Sun, S.S.P. Parkin and M. Ali, American Physical Society, Los Angeles, California, USA, March 5-9, 2018.
402. “Coexistence of Antiferroelectric and Ferroelectric Phases in Ultrathin SnTe Films”, K. Chang, T. Kaloni, Qi-Kun Xue, X. Chen, S. Ji, S. Barraza-Lopez and S.S.P. Parkin, American Physical Society, Los Angeles, California, USA, March 5-9, 2018.
403. “Structural, electronic, ferroelectric, and topological properties of SnTe from atomic layer to bulk”, T. Kaloni, K. Chang, Q.-K. Xue, X. Chen, S. Ji, S.S.P. Parkin and S. Barraza-Lopez, American Physical Society, Los Angeles, California, USA, March 5-9, 2018.

### List of Publications

1. "Magnetic and Transport Properties of 3d Transition Metal Intercalates of some Group Va Transition Metal Dichalcogenides", S.S.P. Parkin and R.H. Friend, *Physica* **99B**, 219 (1980).
2. "3d Transition Metal Intercalates of the Niobium and Tantalum Dichalcogenides: I: Magnetic Properties", S.S.P. Parkin and R.H. Friend, *Phil. Mag.* **41**,65 (1980).
3. "3d Transition Metal Intercalates of the Niobium and Tantalum Dichalcogenides: II: Transport Properties", S.S.P. Parkin and R.H. Friend, *Phil. Mag.* **41**,95 (1980).
4. "3d Transition Metal Intercalates of the Niobium and Tantalum Dichalcogenides: III: Optical Properties", S.S.P. Parkin and A.R. Beal, *Phil. Mag.* **42**,627 (1981).
5. "Conduction Band Symmetry in Ta Chalcogenides from Ta L-edge X-ray Absorption Spectroscopy (XAS)", J.V. Acrivos and S.S.P. Parkin *et al.*, *J. Phys. C* **14**, L349 (1981).
6. "Measurement of X-ray Energies and Line Shapes Using Diffraction Markers", J.V. Acrivos, M.P. Klein, A. Thompson, K. Hathaway, J. Reynolds, J. Code, D. Goodwin and S.S.P. Parkin, *Rev. Sci. Instr.* **53**, 575 (1982).
7. "Magnetic Structure of  $\text{Co}_{1/3}\text{NbS}_2$  and  $\text{Co}_{1/3}\text{TaS}_2$ ", S.S.P. Parkin, E.A. Marseglia and P.J. Brown, *J. Phys. C* **16**, 2765 (1983).
8. "Superconductivity in the Family of Organic Salts Based on the Tetramethyltetraselenafulvalene (TMTSF) molecule:  $(\text{TMTSF})_2\text{X}$  ( $\text{X} = \text{ClO}_4, \text{PF}_6, \text{AsF}_6, \text{SbF}_6, \text{TaF}_6$ )", S.S.P. Parkin, M. Ribault, D. Jerome and K. Bechgaard, *J. Phys. C* **14**, 5303 (1981).
9. "Three New Superconducting Members of the Family of Tetramethyltetraselenafulvalene (TMTSF) Salts:  $\text{TMTSF}_2\text{ClO}_4, \text{TMTSF}_2\text{SbF}_6, \text{TMTSF}_2\text{TaF}_6$ ", S.S.P. Parkin, M. Ribault, D. Jerome and K. Bechgaard, *J. Phys. C* **14**, L445 (1981).
10. "Superconductivity in the Organic Charge Transfer Salts:  $(\text{TMTSF})_2\text{X}$  and  $(\text{TMTTF})_2\text{X}$ ", S.S.P. Parkin, F. Creuzet, M. Ribault, D. Jerome, K. Bechgaard and J.M. Fabre, *Mol. Cryst. Liq. Cryst.* **79**, 249 (1982).
11. "Pressure Dependence of the Metal-Insulator and Superconducting Phase Transitions in  $(\text{TMTSF})_2\text{ReO}_4$ ", S.S.P. Parkin, D. Jerome and K. Bechgaard, *Mol. Cryst. Liq. Cryst.* **79**, 213 (1982).
12. "Thermal Expansion in  $\text{TMTSF-DMTCNQ}$  and  $(\text{TMTSF})_2\text{PF}_6$ ", D.R.P. Guy, E.A. Marseglia, S.S.P. Parkin, R.H. Friend, and K. Bechgaard, *Mol. Cryst. Liq. Cryst.* **79**, 337 (1982).
13. "The Transport Properties of Vanadium Doped  $\text{TiSe}_2$  Under Pressure", R.H. Friend, S.S.P. Parkin and D. Jerome, *J. Phys. C* **15**, L871 (1982).
14. "Optical Reflectivity Spectra of several 3d Transition Metal Intercalates of the Niobium and Tantalum Dichalcogenides: Evidence for Conduction Band Broadening", S.S.P. Parkin and S.C. Bayliss, *J. Phys. C* **15**, 6851 (1982).
15. "Magnetization Density Distribution in  $\text{Mn}_{1/4}\text{TaS}_2$ : Observation of Conduction Electron Spin Polarization", S.S.P. Parkin, E.A. Marseglia and P.J. Brown, *J. Phys. C* **16**, 2749 (1983).
16. "Pressure Dependence of the Metal-Insulator Transitions in  $(\text{TMTTF})_2\text{SCN}$ ", S.S.P. Parkin, C. Coulon and D. Jerome, *J. Phys. C* **16**, L209 (1983).
17. "Antiferromagnetic Resonance in Tetramethyltrithiafulvalene Bromide,  $(\text{TMTTF})_2\text{Br}$ ", S.S.P. Parkin, J.C. Scott, J.B. Torrance and E.M. Engler, *Phys. Rev. B* **26**, 6319 (1982).
18. "Substitution of  $\text{TMTSeF}$  with  $\text{TMTTF}$  in  $(\text{TMTSeF})_2\text{ClO}_4$ : High Pressure Studies", S.S.P. Parkin, C. Coulon, D. Jerome, J.M. Fabre and L. Giral, *J. de Phys.* **44**, 603 (1983).
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