October 2021

CURRICULUM VITAE
Julian Chela-Flores

Index

I. BIODATA:

NAME:

Chela-Flores, Julian.

DATE OF BIRTH:

1942.

PLACE OF BIRTH:

Caracas, Bolivarian Republic of Venezuela.

CITIZENSHIP:

Venezuelan.

MARITAL STATUS:

Married Sarah Catherine Mary Dowling (London, 1969).

INSTITUTIONAL ADDRESS SINCE 1 AUGUST1990:

The Abdus Salam International Centre for Theoretical Physics,

(ICTP), Strada Costiera 11; 34151 Trieste, Italy.

URL of The Abdus Salam ICTP: http://www.ictp.it

PRIZES AWARDED TO THE ICTP

2014 Honorary Citizenship of the City of Trieste (Cittadino Onorario)

2015 The Barcola Prize.

PRIZES AWARDED TO SOCIETIES OF WHICH I AM, OR HAVE BEEN A MEMBER

The 1995 Nobel Peace Prize:

Latin America Pugwash Movement, *Founding Member,* 1981 by invitation of Marcel Roche, http://www.ictp.it/~chelaf/PugwashJCF.pdf. Subsequently, in 1995, the **Nobel Peace Prize** was awarded jointly to Joseph Rotblat and Pugwash Conferences on Science and World Affairs "*for their efforts to diminish the part played by nuclear arms in international politics and, in the longer run, to eliminate such arms*".

PERSONAL DATA:

DIRECT PHONE:	+390-40 2240 392
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E-MAIL:	chelaf@ictp.it
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HOME PAGE:	http://www.ictp.it/~chelaf/index.html
WIKIPEDIA:	http://en.wikipedia.org/wiki/Julian_Chela-Flores

EDUCATION:

Primary School: Grupo Escolar José Martí, Sarria, Caracas, 1949-1955.

Secondary School: Colegio América, San Bernardino, Caracas, 1955-1958.

Holland Park School, Kensington, London, 1958-1961.

City of Westminster College, Victoria Street, London, 1961-1962.

B. Sc. Special, Hons. Mathematics, University of London (at Chelsea College, later became incorporated into King's College), 1965.

M. Phil. in Quantum Mechanics, University of London, 1967. Thesis: **Analytic Properties of Scattering Amplitudes**, under the guidance of Robert Colegrave, External examiner of the University of London: John Charap.

Ph. D. in Quantum Mechanics, University of London, 1969. Thesis: **Violation of Discrete Symmetries,** under the guidance of Robert Colegrave, External examiner of the University of London: Paul T. Matthews.

SCIENCE ACADEMIES:

Fellow, Latin American Academy of Sciences (Founding Director Raimundo Villegas), Caracas, 1987. http://www.acal-scientia.org

Fellow, The World Academy of Sciences TWAS – for the advancement of science in developing countries (Founding Director: Abdus Salam), Trieste, elected 1989, https://twas.org/directory

Foreign Corresponding Member, in Italy, Academia de Ciencias Físicas, Matemáticas y Naturales, Caracas, since 30 April, 1998. *Incorporation Lecture:* 24 November 1999, http://www.academiasnacionales.gob.ve

PREVIOUS POSITIONS:

Research Assistant, University of London, 1969-1971. Under the guidance of John Valatin. Topic of Research: The Theory of Superconductivity. http://www.lon.ac.uk.

***Fellowship* of the International Atomic Energy Agency** (IAEA), at the ICTP, Trieste, Italy, 1971, http://www.ictp.trieste.it.

Temporal Researcher, Venezuelan Institute for Scientific Research (IVIC) http://www.ivic.ve, Caracas, 1971-1972.

Associate Researcher, IVIC, 1972-1977.

Full Associate Researcher, IVIC, 1978 (promoted under the Director Luis Manuel Carbonell).

Full Professor, Universidad Simón Bolívar (USB, http://www.usb.ve), Caracas, 1978-1990.

Research Associate of the School of Theoretical Physics, http://www.stp.dias.ie, Dublin Institute for Advanced Studies (DIAS). Appointment by the Governing Board of the School on 6 May 1994.

Scientific Consultant, Member of the Academic Board, ICTP, Trieste, 1st August 1990-April 1996.

Staff Associate, April 1996-31 July 2014, The Abdus Salam **ICTP**, Trieste from April 1996, nominated by the ICTP Director Miguel Angel Virasoro, subsequently ratified by ICTP Directors Katepalli Srinivasan and Fernando Quevedo.

Research Associate of the School of Theoretical Physics. Dublin Institute for Advanced Studies, **DIAS**, 1994-2019.

CURRENT POSITIONS:

Visiting Scientist, ICTP, Trieste, since 1 August 2014 – present.

Profesor Titular (ad honorem) and Founding Member, Institute for Advanced Studies, **IDEA**, Caracas, since 1980. http://www.idea.gob.ve/

Pension status. **Universidad Simón Bolívar**, USB, (http://www.usb.ve), Caracas, Republica Bolivariana de Venezuela, granted by the Venezuelan Higher Education System, since 1 August 1990.

PREVIOUS ACADEMIC DUTIES:

Adjunct to the Office of External Activities (OEA) at the Abdus Salam ICTP, under the Direction of George Thompson and Joseph Niemela, 2010-2014.

***Scientist in residence by invitation of the ICTP Founding Director Abdus Salam (ratified by subsequent directors Miguelangel Virasoro, Katepalli Srinivasan and Fernando Quevedo*)**:

In charge *of the Programme of Physics of the Living State* for Biophysics and Neurophysics, ICTP, Trieste, 1 August 1990 till 31 July 2014 (http://www.ictp.trieste.it/~chelaf/ss8.html).

Dean for Research, USB, 1979-1985 (by invitation of Chancellor Ernesto Mayz Vallenilla and ratified by subsequent ones, Antonio Villegas and Jose Robero Bello.

The Dean's close collaborators included Juan Garbarino, Lorenzo Lara, Anibal Romero, Andrés Bansart. Francisco García Sanchez, Saul Guerrero, Marta Isern, José Rafael Cordoba, María Pilar Garcia, Maribel Giménez de Guzmán, Antonio Hernández and Zadila Suarez de Mata.

Member, General Council and Education Committee, IDEA, 1981-1985.

Member, National Council of Research in Science and Technology (CONICIT), Caracas, 1981-1984.

Member, Advisory Technical Commission in Physics for the Venezuelan Academy of Physics, Mathematics, and the Natural Sciences, Caracas, 1984.

Member, Ministry of Education Commission for the reform of the higher education system, and coordinator of two of its sub-commissions, Ministry of Education, Venezuela, 1981-1983.

Founding Member, IDEA, Caracas, 1980, an initiative of Raimundo Villegas (Science Minister), in collaboration with Ignacio Rodríguez Iturbe, Antonio Sanabria and Julián Chela-Flores.

Member, General Council, F. J. Duarte Foundation for Astronomical Research, Merida, Venezuela, 1975-1980.

Founding Member, Center of Advanced Studies (Centro de Estudios Avanzados), IVIC, following the initiative of its Head Leopoldo Villegas, 1972-1974 and 1976-1978. http://cea.ivic.ve.

Member of the Biology Committee of TWAS, 1993-1998.

Regional Representative for Italy for ISSOL, The International Astrobiology Society. http://www.issol.org during the period 2000-2002. Appointed by the ISSOL Selection Committee "In recognition of commitment to origin of life-related research and contributions to and support of the International Society for the Study of the Origin of Life".

Member of the Editorial Board of a book series on "Cellular Origin and Life in Extreme Habitats and Astrobiology". Editor: Joseph Seckbach. Springer, Dordrecht (1999-2013).

AWARDED (personal):

CONICIT Mencion Honorifica, 1977 for the work on superfluid helium, based on the earlier work of F. W. Cummings and co-workers.

Order of Andres Bello, Second Class, Venezuelan Government, 1982.

Public Acknowledgement, Director's Council, IDEA (2 December, 1999), for the organization of the Iberoamerican School of Astrobiology in collaboration with Juan (John) Oro and Guillermo Lemarchand.

DISTINCTIONS IN SCIENCE:

Fellowship, IAEA, March till September, 1971 (held at the ICTP).

Associate Membership, The Abdus Salam ICTP, 1972-1976. Visits: 15/6/1972-1/9/1972; 20/6/1973-18/9/1973 and 18/6/1974 -18/9/1974.

Honorary Membership, The Abdus Salam ICTP, 1977-1981. Visits: 6/6/1977-17/10/1977 and 13/7/1981- 31/8/1981.

Full Researcher (a.h.), CIDA, Merida, Venezuela, 1982.

Fellowship, Dipartimento per la Cooperazione allo Sviluppo, Ministero degli Affari Esteri, Italy, 1987 (held at the ICTP).

Visiting Scientist, The Abdus Salam ICTP, Visits in 1982, 1985 -1987, 1988, 1989.

Research Associate DIAS, since1994.

Visiting Professorship, USB, under the sponsorship of the *Juan Antonio Perez Bonalde* Programme: Contacto con Venezuela" for the visit of Venezuelan experts working abroad. Visit: 3-17 May 1997.

DISTINCTIONS IN THE HUMANITIES

Philosophy

***Visiting Professorship*, UNESCO Chair of Philosophy** (IDEA, Caracas, Venezuela) with support of the UNESCO-sponsored programme TALVEN. February 9-20, 1998.

Theology

Speaker at the "Cattedra dei non credenti", "Frontiers of Science", together with Edoardo Boncinelli, in a series of events sponsored and coordinated by His Eminence the late Cardinal Carlo Maria Martini, 5 November, 1998.

MEMBER:

• ISSOL, The International Astrobiology Society, 1990-2014.

• *Venezuelan Physical Society (SVF) until 2019.*

• *Sociedad Venezolana de Ciencias Espaciales* (SVCE), Founding Member, 2005.

• Member of the European Geosciences Union (EGU), 2008-2014.

AREAS OF INTEREST

IN SCIENCE

• Team Member of a preliminary proposal for a mission to Europa and the Jupiter system entitled LAPLACE. The original LAPLACE proposal was elaborated and supported by a team of 359 scientists from 15 countries. The list of team members is available at: LAPLACE Team Members: http://www.ictp.it/~chelaf/ LAPLACE_Members.pdf

• In February 2009 a funding decision was taken by NASA and ESA in favor of a Jupiter mission with the name of the Europa-Jupiter System Mission (EJSM) based on, replacing and extending our original Laplace proposal. In 2011 the European Space Agency renamed this mission as JUICE (JUpiter ICy moon Explorer).

• Member of a proposal (DOI) for instrumentation suitable for exploring the stable-isotope geochemical biosignatures on the icy surface of Europa: http://www.ictp.it/~chelaf/Cosmic_Vision_EJSM_Penetrators_DOI.pdf

• Member of **LunarNet,** a proposal to the European Space Agency (ESA) in response to the 2010 call for medium sized missions opportunity in ESA's Science Programme for launch in 2022: http://www.ictp.it/~chelaf/Smith.pdf

• Endorser of "**Lunar Science as a Window into the Early History of the Solar System**", a White Paper submitted in response to ESA's Call for Proposals for Cosmic Vision L2/3 Science Themes (2013).

• Endorser of a White Paper submitted in response to the call for new scientific ideas in ESA's science programme: *Lunar Palaeoregoliths as Recorders of Solar System History*. Principal Contact: Professor I.A. Crawford, Department of Earth and Planetary Sciences, Birkbeck College London, UK (2016).

IN THE HUMANITIES

• Relation of astrobiology with the humanities.

IN SCIENCE COMMUNICATION

Popularising the appropriate place of science and humanism in a cultural context.

II. PUBLICATIONS

(a) Astrobiology

RESEARCH ARTICLES

1. Chela-Flores, J. (1985). Evolution as a Collective Phenomenon. J.Theor.Biol. **117,** 107-118.

2. Chela-Flores, J. (1988). Evolutionary Implications of Genetic Code Deviations. Acta Biotheoretica (Leiden) **37,** 267-279.

3 Chela-Flores, J. (1991). Comments on a Novel Approach to the Role of Chirality in the Origin of Life. Chirality **3**, 389-392. http://www.ictp.it/~chelaf/Chirality1.pdf

4. Chela-Flores, J. (1993). Spontaneous regulating mechanisms that may have led to the origin of life. In: *Chemical Evolution: Origin of Life* (Eds. C. Ponnamperuma and J. Chela-Flores. A. Deepak Publishing: Hampton, Virginia, USA. pp. 119-133.

5. Chela-Flores, J. (1994a). Are viroids molecular fossils of the RNA world?. J. Theor. Biol. **166,** 163-166.

6. Chela-Flores, J. (1994b). The origin of chirality in protein amino acids. Chirality 6, 165-168. http://www.ictp.it/~chelaf/Chirality2.pdf

7. Chela-Flores, J. (1994c). Some physical problems in biology: Aspects of the origin and structure of the first cell. J. Biol. Phys. **120**, 315-330.

8. Chela-Flores, J. (1994d). La vita nell'universo: verso una comprensione delle sue origini. (Proc. Venice Conference on Cosmology and Philosophy. Ca' Dolfin, Venice, December, 1992). In: *Origini: l'universo, la vita, l'intelligenza.* Eds. F. Bertola, M. Calvani and U. Curi. Padova: Il Poligrafo (1994) pp. 33-50.

9. Chela-Flores, J. (1995a). Is the Salam phase transition relevant to the causal origin of homochirality ?. Proc. Pakistan Acad. Sci. **32**, 1-12 (By invitation of the Editor for the Abdus Salam 70th anniversary). http://www.ictp.it/~chelaf/Chirality3.pdf

10. Chela-Flores, J. (1995b). Molecular relics from chemical evolution and the origin of life. In: *Chemical Evolution: Self-Organization of the Macromolecules of Life* Eds. J. Chela-Flores, M. Chadha, A. Negron-Mendoza, and T. Oshima. A. Deepak Publishing: Hampton, Virginia, USA. pp. 185-200.

11. Chela-Flores, J. (1995c). Some physical problems in biology: Aspects of the origin and structure of the first cell. In: *Chemical Evolution: The Structure and Model of the First Cell* Eds. C. Ponnamperuma and J. Chela-Flores. Kluwer Academic Publishers, Dordrecht, The Netherlands. pp. 315-330.

12. Chela-Flores, J. and Kumar, N. (1995). Cosmological sources of molecular chirality.In: *Chemical Evolution: Self-Organization of the Macromolecules of Life* Eds. J. Chela-Flores, M. Chadha, A. Negron-Mendoza, and T. Oshima. A. Deepak Publishing: Hampton, Virginia, USA. pp. 295-302.

13. Chela-Flores, J. (1996a). Preservation of relics from the RNA world through natural selection, symbiosis and horizontal gene transfer. Acta Biotheoretica **44,** 169-177.

14. Chela-Flores, J. (1996b). First steps in eukaryogenesis: Origin and evolution of chromosome structure. In: Chela-Flores, J. and Raulin, F. (Eds.). (1996). *Chemical Evolution: Physics of*

the Origin and Evolution of Life Kluwer Academic Publishers, Dordrecht, The Netherlands. pp. 185-196.

15. Chela-Flores, J. (1997a). A Search for Extraterrestrial Eukaryotes: Biological and Planetary Science Aspects. In: *Astronomical and Biochemical Origins and the Search for Life in the Universe.* Eds. C.B. Cosmovici, S. Bowyer and D. Werthimer. Editrice Compositore: Bologna. pp. 525-532.

16. Chela-Flores, J. (1997b). Testing for evolutionary trends of Europan biota. In: *Instruments, Methods and Missions for Investigation of Extraterrestrial Microorganisms,* (R.B.Hoover, ed.), Proc. SPIE, **3111**, pp. 490-500, pp. 262-271.

17. Joan Horvath, Frank Carsey, James Cutts, Jack Jones, Elizabeth Johnson, Bridget Landry, Lonne Lane, Gindi Lynch, Julian Chela-Flores, Tzyy-Wen Jeng and Albert Bradley (1997). Searching for ice and ocean biogenic activity on Europa and Earth. In: *Instruments, Methods and Missions for Investigation of Extraterrestrial Microorganisms,* The International Society for Optical Engineering, Bellingham, Washington USA. (R.B.Hoover, ed.), Proc. SPIE, **3111**, pp. 490-500. http://www.ictp.trieste.it/~chelaf/searching_for_ice.html

18. Chela-Flores, J. (1998a). First steps in eukaryogenesis: Origin and evolution of chromosome structure. Origins Life Evol. Biosphere **28,** 215-225. http://www.ictp.trieste.it/~chelaf/eukaryogenesis.html

19. Chela-Flores, J. (1998b). Possible degree of evolution of solar-system microorganisms. In: Chela-Flores, J. and Raulin, F. (Eds.). (1998). *Chemical Evolution: Exobiology: Matter, Energy, and Information in the Origin and Evolution of Life in the Universe.* Kluwer Academic Publishers, Dordrecht, The Netherlands. pp. 229-234.

20. Seckbach, J., Jensen, T.E., Matsuno, K., Nakamura, H., Walsh, M.M. and Chela-Flores, J. (1998). Is there an alternative path in eukaryogenesis? An astrobiological View on Making the Nucleated Cell. In: Chela-Flores, J. and Raulin, F. (eds.). *Chemical Evolution: Exobiology: Matter, Energy, and Information in the Origin and Evolution of Life in the Universe.* Kluwer Academic Publishers, Dordrecht, The Netherlands. pp. 235-240.

21. Chela-Flores, J. (1998c). Europa: A potential source of parallel evolution for microorganisms. In: *Instruments, Methods and Missions for Astrobiology.* The International Society for Optical Engineering, Bellingham, Washington USA. (R.B.Hoover, ed.), Proc. SPIE, **3441**, pp. 55-66.
(cf., http://www.ictp.trieste.it/~chelaf/ss4.html
http://www.es.ucl.ac.uk/research/planetary/undergraduate/dom/titan/titan.htm

22. Chela-Flores, J. (1998d). A Search for Extraterrestrial Eukaryotes: Physical and Biochemical Aspects of Exobiology. Origins Life Evol. Biosphere **28,** 583-596.
http://www.ictp.trieste.it/~chelaf/searching_for_extraterr.html

23. Chela-Flores, J. (1999). Eukaryogenesis: The search for an evolutionary transition towards intelligence in an extreme environmental habitat of the Outer Solar System. Invited chapter in the book: *Enigmatic microorganisms and life in extreme environmental habitats.* ed. J. Seckbach. Kluwer Academic Publishers, Dordrecht, The Netherlands. pp. 63-71.
http://www.ictp.trieste.it/~chelaf/ss1.html

24. Chela-Flores, J. (2000a). Terrestrial Microbes as Candidates for Survival on Mars and Europa. Invited chapter published in: "Journey to Diverse Microbial Worlds: Adaptation to Exotic Environments" , ed. Joseph Seckbach; a volume which is part of the book series on *Cellular Origin and Life in Extreme Habitats.* Kluwer Academic Publishers, Dordrecht, The Netherlands. Chapter 27, pp. 387-398. http://www.ictp.trieste.it/~chelaf/ss2.html

25. Chela-Flores, J. (2000b). Testing the Drake Equation in the solar system, in *A New Era in Astronomy,* Lemarchand G.A. and Meech K. (eds.), ASP Conference Series, San Francisco, **213,** 402-410. http://www.ictp.trieste.it/~chelaf/TestingDrakeEq.html

26. Chela-Flores, J. (2000c). Origins from the Big-Bang to Civilisation, in: Chela-Flores, J., Lemarchand, G. A. and Oro, J. (eds.) *Astrobiology.* (Proc. Iberoamerian School of Astrobiology, Caracas, 1999. Kluwer Academic Publishers: Dordrecht, The Netherlands. pp. 3-12.

27. Seckbach, J., Westall, F. and Chela-Flores, J. (2000). Introduction to Astrobiology. In: "Journey to Diverse Microbial Worlds: Adaptation to Exotic Environments", ed. Joseph Seckbach; a volume which is part of the book series on *Cellular Origin and Life in Extreme Habitats.* Kluwer Academic Publishers, Dordrecht, The Netherlands. Chapter 25, pp. 367-375. http://www.ictp.trieste.it/~chelaf/ss3.html. ***Translation (into Spanish)***: http://www.ictp.trieste.it/~chelaf/ss14.html

28. Chela-Flores, J. (2001a). Search for microorganisms on Europa and Mars in relation with the evolution of intelligent behavior on other worlds. ESA SP **496**, pp. 219-222. http://www.ictp.trieste.it/~chelaf/ss5.html

29. Seckbach, J. and Chela-Flores, J. (2001) Frontiers of extremophilic microorganisms: From life on the edge to astrobiology**.** ESA SP **496**, pp. 255-260.
http://www.ictp.trieste.it/~chelaf/ss10.html

30. Chela-Flores, J. (2001b). Posible Grado de Evolucion de Microorganismos del Sistema Solar. Lecture delivered as a requirement for completing the incorporation into the Academy as a Corresponding Member in Italy. Boletin de la Academia Venezolana de Ciencias Físicas, Químicas, Matemáticas y Naturales **61,** Numero 4, pp. 65-71

31. Chela-Flores, J. (2002). Can evolutionary convergence be tested on Europa? European Space Agency Special Report ESA SP **518**, 337-340. http://www.ictp.trieste.it/~chelaf/ss11.html

32. Chela-Flores, J. (2003). Testing Evolutionary Convergence on Europa. International Journal of Astrobiology **2,** (4): 307-312 (Cambridge University Press).

33. Seckbach, J., Chela-Flores (2003). Frontiers of extremophilic microorganisms and the question of extraterrestrial life: form life on the edge to astrobiology, in Frontiers of Life, ed. L.M. Celnikier and J. Tran Thanh Van, The Gioi Publishers, Vietnam, pp. 125-132.

34. Chela-Flores, J. (2004a). Astrobiology's Last Frontiers: Distribution and Destiny of Life in the Universe, in: "Origins: Genesis, Evolution and the Biodiversity of Life ", J. Seckbach (ed.), *Cellular Origin, Life in Extreme Habitats and Astrobiology*, **6,** Springer, Dordrecht, The Netherlands, pp. 667-679. http://www.ictp.trieste.it/~chelaf/ss12.html

35. Akindahunsi, A. A. and Chela-Flores, J. (2004). On the question of convergent evolution in biochemistry, in Seckbach, J., Chela-Flores, J., Owen, T. and Raulin, F., (eds.), in "Life in the Universe", Cellular Origin and Life in Extreme Habitats and Astrobiology, **7**. Springer: Dordrecht, The Netherlands, pp. 135-138.

36. Bhattacherjee, A. B and Chela-Flores, J. (2004). Search for bacterial waste as a possible signature of life on Europa, in Seckbach, J., Chela-Flores, J., Owen, T. and Raulin, F., (eds.), in "Life in the Universe", Cellular Origin and Life in Extreme Habitats and Astrobiology, **7**. Springer: Dordrecht, The Netherlands, pp. 257-260.

37. Gatta, R. S. and Chela-Flores, J. (2004). Application of molecular biology techniques in astrobiology, in Seckbach, J., Chela-Flores, J., Owen, T. and Raulin, F., (eds.), in "Life in the Universe", Cellular Origin and Life in Extreme Habitats and Astrobiology, **7**, Springer: Dordrecht, The Netherlands, pp. 269-273.

38. Chela-Flores, J. (2004b). Evolution of intelligent behavior: Is it a question of time?, in Seckbach, J., Chela-Flores, J., Owen, T. and Raulin, F., (eds.), in "Life in the Universe", Cellular Origin and Life in Extreme Habitats and Astrobiology, ***7,*** Springer: Dordrecht, The Netherlands, pp. 327-331.

39. Chela-Flores, J. (2006a). Destinies of Life and the Universe: the final frontiers of astrobiology and cosmology, in *"Life as we know it"*. Cellular Origins, Life in Extreme Habitats and Astrobiology, Springer, Dordrecht, The Netherlands, pp. 505-517,

40. Chela-Flores, J. (2006b). The sulphur dilemma: Are there biosignatures on Europa's icy and patchy surface? *International Journal of Astrobiology,* **5**, pp. 17-22. http://www.ictp.it/~chelaf/ss64.html

41. Seckbach, J. Raulin, F., Oren, A., Kolb, V. and Chela-Flores, J. (2006). What do we call life? A Brief Outlook on Life, in: *"Life as we know it"*. Cellular Origins, Life in Extreme Habitats and Astrobiology, Springer: Dordrecht, The Netherlands, 739-743,

42. Messerotti, M. and Chela-Flores, J. (2007a). Solar activity and solar weather in the framework of life origin and evolution on Earth. ESA's Publication Division. Special Publication.

43. Messerotti, M. and Chela-Flores, J. (2007b). Signatures of the ancient Sun constraining the early emergence of life on Earth. In: Space Weather. Research towards Applications in Europe, Jean Lilensten, ed., Springer, Dordrecht, The Netherlands, Astrophysics and Space Science Library (ASSL) Series, Vol. 344, pp. 49-59.

44. Chela-Flores, J. and Messerotti, M. (2007). Constraints on the origin of life due to the physics of the ancient Sun. IV Convegno della Ricerca Italiana in Fisica Solare e Relazione Sole-Terra Memorie della Società Astronomica Italiana Supplementi (in forma elettronica).

45. Chela-Flores, J. (2007). Testing the universality of biology. *International Journal of Astrobiology,* 6 (3): 241-248. (Cambridge University Press). http://www.ictp.it/~chelaf/universality.pdf

46. Seckbach, J. and Chela-Flores, J. (2007) Extremophiles and Chemotrophs as Contributors to Astrobiological Signatures on Europa: A Review of Biomarkers of Sulfate-Reducers and Other Microorganisms, in "Instruments, Methods, and Missions for Astrobiology X", edited by Richard B. Hoover, Gilbert V. Levin, Alexei Y. Rozanov, Paul C. W. Davies Proc. of SPIE Vol. **6694**, 66940W.

47. Seckbach, J. Chela-Flores, J., Oren, A. and Raulin F. (2008). Summary, final comments and conclusions. In: "From Fossils to Astrobiology", J. Seckbach (ed.), Cellular Origins, Life in Extreme Habitats and Astrobiology, Springer, Dordrecht, The Netherlands, pp. 515-520.

48. Chela-Flores, J. (2008). Fitness of the cosmos for the origin and evolution of life: from biochemical fine-tuning to the Anthropic Principle, in "Fitness of the cosmos for life: Biochemistry and fine-tuning", John D. Barrow, Simon Conway Morris, Stephen J. Freeland and Charles L. Harper, eds. Cambridge University Press, pp.151-166. First paperback edition (2012). ISBN 978-1-107-40655-1 Paperback.

49. Smith, A., Crawford, I. A., Gowen, R. A., Ball, A. J., Barber, S. J., Church, P., Coates, A. J., Gao, Y., Griffiths, A. D., Hagermann, A., Phipps, A., Pike, W.T., Scott, R., Sheridan, S., Sweeting, M., Talboys, D., Tong, V., Wells, N., Biele, J., Chela-Flores, J., Dabrowski, B., Flannagan, J, Grande, M., Grygorczuk, J., Kargl, G., Khavroshkin, O. B., Klingelhoefer, G., Knapmeyer, M., Marczewski, W., McKenna-Lawlor, S., Richter, L., Rothery, D.A., Seweryn, K., Ulamec, S., Wawrzaszek, R., Wieczorek, M., Wright, I.P. (2008) LunarEX – A proposal to Cosmic Vision, *Experimental Astronomy* **10.**1007/s10686-008-9109-6 (August 21, 2008).

50. Chela-Flores, J. and Kumar, N. (2008). Returning to Europa: Can traces of surficial life be detected? *International Journal of Astrobiology*, 7(3) 263-269 (Cambridge University Press).

51. Messerotti, M. and Chela-Flores, J. (2008). Solar Activity and Life. A Review. In: *Developing the scientific basis for monitorin, modelling and predicting Space Weather*. Ed. by J. Lilenstein, A. Belahaki, M. Messerotti, R. Vainio, J. Watermann and S. Poedts. COST Action 724, Scientific Final Report, EUR 23348, pp. 80-87.

52. Chela-Flores, J. Jerse, G., Messerotti, M. And Tuniz, C. (2009) Astronomical and astrobiological imprints on the fossil records. A review. "From Fossils to Astrobiology", Ed. J. Seckbach, Cellular Origins, Life in Extreme Habitats and Astrobiology, Springer, Dordrecht, The Netherlands, pp. 389-408.

53. Messerotti, M. and Chela-Flores, J. (2009). Solar Activity and Life. A Review. Acta Geophysica **57** (1), 64-74. http://www.ictp.it/~chelaf/MesserottiJCF.pdf

54. Blanc, M. et al and LAPLACE Team Members (2009). LAPLACE: a mission to Europa and the Jupiter System for ESA's Cosmic Vision Programme, Experimental Astronomy, Volume 23, Issue 3, pp. 849-892.
LAPLACE Team Members are in: http://www.ictp.it/~chelaf/ss164.html

55. Seckbach, J., Ericksson, P. G., Walsh, M. M., Oren, A. and Chela-Flores, J. (2009). Microbial Mats: Summary and Conclusions. In: J. Seckbach and A. Oren (eds.) *Microbial Mats*, COLE series, Springer, Dordrecht, The Netherlands, pp. 585-590.
http://www.ictp.it/~chelaf/MIMAFinalChapt.pdf

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(c) ARTICLES ON SCIENCE COMMUNICATION

1. Chela-Flores, J. (1977). Significación del trabajo de Max Planck. Instituto Venezolano de Investigaciones Cientificas (Centro de Estudios Avanzados), Caracas.

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(d) SCIENCE AND SOCIETY

1. Chela-Flores, J. (1986). Islands of Excellence as Catalysts for University Cooperation. In: La cooperazione universitaria Bilancio e prospettive delle esperienze Europa - Paesi in via di sviluppo. Le Monnier-Istituto per la Cooperazione Universitaria: Rome. pp. 153-157.

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III. PARTICIPATION IN SCIENTIFIC EVENTS:

(a) Astrobiology

1. Chela-Flores, J. (1992a). Genetics, Evolution, and the Origin of Life. A set of three lectures delivered in: Fifth College on Biophysics - College on Methods and Experimental Techniques in Biophysics. Trieste, Italy, 28 September-23 October.

2. Chela-Flores, J. (1992b). Spontaneous regulating mechanisms that may have led to the origin of life. Conference on Chemical Evolution and the Origin of Life. Trieste, Italy, 26-30 October.

3. Chela-Flores, J. (1992c). Life in the universe: Towards an understanding of its origin. Invited lecture delivered at the Venice Conference on Cosmology and Philosophy. *Universe: Origins, Life, Intelligence*. Ca' Dolfin (University of Venice, Ca'Foscari). 19 December.

4. Chela-Flores, J. (1993a). Delivered, by invitation, the lecture of Professor Abdus Salam: Biological macromolecules and the phase transitions they bring about. International Symposium "Conceptual Tools for Understanding Nature", University of Trieste, Trieste, Italy, 16-17 April. World Scientific Publishers. pp. 209-220.

5. Chela-Flores, J. (1993b). Molecular relics from chemical evolution and the origin of life. Conference on Self-Organization of the Macromolecules of Life. Second Trieste Conference on Chemical Evolution, Trieste, Italy, October 25-29.

6. Chela-Flores, J. and Kumar, N. (1993). Cosmological sources of molecular chirality. Conference on Self-Organization of the Macromolecules of Life. Second Conference on Chemical Evolution, Trieste, Italy, October 25-29.

7. Chela-Flores, J. (1994). Some physical problems in biology: Aspects of the origin and structure of the first cell. Third Trieste Conference on Chemical Evolution: The Structure and Model of the First Cell. *The Alexander Ivanovich Oparin 100th Anniversary Conference,* Trieste, Italy, 29 August-2 September.

8. Chela-Flores, J. (1995). First steps in eukaryogenesis: Origin and evolution of chromosome structure. *Cyril Ponnamperuma Memorial Conference*. The Fourth Trieste Conference on Chemical Evolution: Physics of the Origin and Evolution of Life. Trieste, 4-8 September.

9. Chela-Flores, J. (1996a). Asymmetry in biomolecules: An evolutionary overview. Introductory Lecture, Mini-symposium on *Asymmetry in Biomolecules: Pharmacological, physical, chemical and biological consequences*. International Centre for Theoretical Physics, Trieste, from 13-15 March.

10. Chela-Flores, J. (1996b). On the selection of biomolecular chirality during chemical evolution. Mini-symposium on *Asymmetry in Biomolecules: Pharmacological, physical, chemical and biological consequences*. International Centre for Theoretical Physics, Trieste, from 13-15 March.

11. Chela-Flores, J. (1996c). DNA folding in Eukaryogenesis. Seventh ICTP College on Biophysics: *Structure and Function of Biopolymers: Experimental and Theoretical Techniques*. 4-26 March.

12. Chela-Flores, J. (1996d). Principi fisici applicati all'evoluzione biologica. Seminar, Biology Department, University of Padova. 18 April, 1996.

13. Chela-Flores, J. (1996e). A Search for Extraterrestrial Eukaryotes: Biological and Planetary Science aspects. 5th International Bioastronomy Symposium (IAU Colloquium No. 161). "Astronomical and biochemical origins and the search for life in the universe". Capri, Palazzo dei Congressi (Naples), Italy. July 1-5.

14. Chela-Flores, J. (1996f). A Search for Extraterrestrial Eukaryotes: Physical and Biochemical Aspects of Exobiology. 8th ISSOL Meeting. 11th International Conference on the Origin of Life. Orleans, France. July 8-13. 34. (Summary). Origins Life Evol. Biosphere **26,** 503-504

15. Chela-Flores, J. (1996g). Habitability of Europa: possible degree of evolution of Europan biota. Europa Ocean Conference at San Juan Capistrano Research Institute. San Juan Capistrano, California, USA. 12-14 November, 1996, pp. 21-21a.

16. Chela-Flores, J. (1997a). Simetria y Evolucion. Sala Raymundo Chela, Universidad Central de Venezuela, Caracas. 12 May.

17. Chela-Flores, J. (1997b). Astrobiología. Series of three lectures delivered at Simon Bolivar University (Caracas, Venezuela). 3-17 May, 1997, 1997. Sponsored by the Juan Antonio Pérez Bonalde Program: "*En contacto con Venezuela*" (FUNDAYACUCHO/ CONICIT).

18. Chela-Flores, J. (1997c). Eucariogénesis. Seminar at the end of a short course on *Astrobiology* promoted by the Juan Antonio Pérez Bonalde Program: "*En contacto con Venezuela*", Simon Bolivar University (Caracas, Venezuela). 3-17 May, 1997.

19. Chela-Flores, J. (1997d). Can Evolutionary Trends Be Tested in Antarctica as a Europa Analog? Participation in the Workshop "*Biological and biochemical contamination control on Earth and Europa*". July 23-25, 1997. Pasadena Hilton, Pasadena, California.

20. Joan Horvath, Frank Carsey, James Cutts, Jack Jones, Elizabeth Johnson, Bridget Landry, Lonne Lane, Gindi Lynch, Julian Chela-Flores, Tzyy-Wen Jeng and Albert Bradley (1997). Searching for ice and ocean biogenic activity on Europa and Earth. *Optical Science, Engineering, and Instrumentation SD 97 Symposium: Instruments, Methods and Missions for Investigation of Extraterrestrial Microorganisms*. San Diego Convention Center, and Marriot Hotel & Marina. 27 July-1 August 1997. San Diego, CA, USA.

21. Chela-Flores, J. (1997e). Testing for evolutionary trends of Europan biota. Oral presentation at: *Optical Science, Engineering, and Instrumentation SD 97 Symposium: Instruments, Methods and Missions for Investigation of Extraterrestrial Microorganisms*. San Diego Convention Center, and Marriot Hotel & Marina. 27/7-1/8/97. San Diego, CA, USA.

22. Chela-Flores, J. (1997f). Possible degree of evolution of Solar-System Microorganisms. Fifth Trieste Conference on Chemical Evolution. *Exobiology: Matter, Energy, and Information in the Origin and Evolution of Life in the Universe*. Trieste (Italy), 22-26 September.

23. Chela-Flores, J. (1997g). La microbiologia come ponte fra l'esobiologia e la bioastronomia. Coordiantor. Ludovico Galleni. Proc. Second Italian Bioastronomy Meeting. University of Pisa. (Paper submitted by invitation of the organizer without attending the meeting.)

24. Chela-Flores, J. (1998). Europa: A potential source of parallel evolution for microorganisms. *SD 98 Symposium: Instruments, Methods and Missions for Astrobiology*. 19-22 July, 1998. San Diego Convention Centre. The Int. Soc. Optical Engineering, Bellingham, USA.

25. Chela-Flores, J. (1999a). Testing the Drake Equation in the Solar Sysem. Invited talk at the

6th International Conference on Bioastronomy (IAU Colloquium): *A New Era in the Search for Life in the Universe*. August 2-6. Hapuna Beach Prince Hotel, Kohala Coast, Hawaii, USA.

26. Chela-Flores, J. (1999b). Posible Grado de Evolucion de Microorganismos del Sistema Solar. Talk at the Academia Venezolana de Ciencias Físicas, Químicas, Matemáticas y Naturales. Palacio de las Academias, Caracas, 24 November. Lecture delivered as a requirement for completing the incorporation into the Academy as a Corresponding Member in Italy.

27. Chela-Flores, J. (1999c). Astrobiology: A set of two lectures at the *Ibero-American School of Astrobiology*. Also participated in two round-tables: "*Mars*" and "*Music of the Spheres: Would other intelligence display artistic creativity?*". Instituto Internacional de Estudios Avanzados (Universidad Simon Bolivar), Caracas, Venezuela. 29 November-8 December.

28. Chela-Flores, J. (2000). Implications of possible biological evolution outside habitable zones in solar systems. Sixth Trieste Conference on Chemical Evolution. *The First Steps of Life in the Universe*. Trieste, Italy, 18-22 September.

29. Chela-Flores, J. (2001a). Is the evolution of intelligent behavior universal? Third Antonio Borsellino College of Neurophysics*: Evolution of intelligent behavior*. Trieste, ICTP, 23 April-May 4.

30. Chela-Flores, J. (2001b). Search for Micro-organisms on Europa and Mars in relation with the Evolution of Intelligent Behavior on other Worlds.
First European Workshop on Exo/Astrobiology, 21-23 May 2001, ESRIN, Frascati (near Rome), Italy.

31. Chela-Flores, J. (2002a). The origin of complexity in biology. Seminar at ICTP, 8th May.

32. Chela-Flores, J. (2002b). Introduzione all'astrobiologia: dalle stelle alla vita nell'universo. Invited talk at the Scuola dell'Associazione Genetica Italiana (A.G.I.), Corso su: "Origine della Vita sulla Terra". Cortona (AR) 3-5 June.

33. Chela-Flores, J. (2002c). Can evolutionary convergence be tested on Europa?. Second Workshop on Exo/Astrobiology, Graz, Austria, September 16-19.

34. Chela-Flores, J. (2003a). A frontier between astrophysics and electrophysiology in the new science of astrobiology. Astrophysics Group, Scuola Internazionale di Studi Avanzati, SISSA, Trieste, 18 February.

35. Akindahunsi, A. A. and Chela-Flores, J. (2003). On the question of convergent evolution in biochemistry. Seventh Trieste Conference on Chemical Evolution. *The search for life in the universe: From the Miller experiment to the search for life on other worlds*. Trieste, Italy, 15-19 September..

36. Bhattacherjee, A. B and Chela-Flores, J. (2003). Search for bacterial waste as a possible signature of life on Europa, Seventh Trieste Conference on Chemical Evolution. *The search for life in the universe: From the Miller experiment to the search for life on other worlds*. Trieste, Italy, 15-19 September.

37. Gatta, R. S. and Chela-Flores, J. (2003). Application of molecular biology techniques in astrobiology, Seventh Trieste Conference on Chemical Evolution. *The search for life in the universe: From the Miller experiment to the search for life on other worlds*. Trieste, Italy, 15-19 September.

38. Chela-Flores, J. (2003b). Evolution of intelligent behavior: Is it a question of time?, Seventh Trieste Conference on Chemical Evolution. *The search for life in the universe: From the Miller experiment to the search for life on other worlds*. Trieste, Italy, 15-19 September.

39. Chela-Flores, J. (2004). Lacustrine environments as models of the ocean on Europa. Applied Physics Seminar, ICTP, October 18.

40. Messerotti, M. and Chela-Flores, J. (2004). Preliminary identification of space weather key agents for the emergence of life in exoplanetary environments. First European Space Weather Week Conference, ESTEC, Noordwijk, The Netherlands, November 29-December 3, 2004.

41. Messerotti, M. and Chela-Flores, J. (2005a). Solar Space Weather as a Factor in the Origin of the Biosphere (Solicited), European Geosciences Union General Assembly 2005 (EGU05), Session ST9: *Solar and heliospheric influences on the Earth's ecosystem*. Vienna, Austria, 24 - 29 April 2005. Geophysical Research Abstracts, Vol. 7, 07943, 2005, SRef-ID: 1607-7962/gra/EGUO5-A-07943, European Geosciences Union 2005.
http://www.cosis.net/members/meetings/sessions/oral_programme.php?p_id=126&s_id=2019
Option : EGU05-A-07943; ST9-1MO2O-003

42. **European Geophysical Union (EGU 2005)**
Chela-Flores, J., P. Del Negro, S. Predonzani, S. Fonda Umani and C. P. McKay (2005). Instrumentation for the Detection of Biosignatures on Europa. European Geosciences Union General Assembly 2005 (EGU05), Session GI3: *Space Instrumentation*. Vienna, Austria, 24 - 29 April 2005. Geophysical Research Abstracts. Vol. 7, 03984, 2005, SRef-ID: 1607-7962/gra/EGUO5-A-03984, European Geosciences Union 2005, http://www.cosis.net/members/meetings/sessions/poster_programme.php?p_id=127&s_id=2079&PHPSESSID=d4c9e6c672f2c2de5283ebb87f602123

43. Messerotti, M. and Chela-Flores, J. (2005b). Solar activity and solar weather in the framework of life origin and evolution on Earth (Invited), Session I: Why we need improved understanding, and predictions of solar activity, International Workshop on Solar Activity: Exploration, Understanding and Prediction, Lund, Sweden 19-21 September, 2005.
http://www.lund.irf.se/workshop/program.html

44. Chela-Flores, J. and Messerotti, M. (2005). Constraints on the origin of life due to the physics of the ancient Sun. IV Convegno della Ricerca Italiana in Fisica Solare e Relazione Sole-Terra (18-20 Ottobre 2005) Sessione 6 - Relazione Sole-Terra: Variabilita' ed Attivita' del Sole Giovedi', 19 Ottobre, 2005.

45. Messerotti, M. and Chela-Flores, J. (2005c). Signatures of the ancient Sun constraining the early emergence of life on Earth. Second European Space Weather Week, ESTEC (Noordwijk, The Netherlands), 14th - 18th November, 2005. This meeting is being jointly organised by ESA, the SWWT, the COST 724, COST 296 and E-STAR (ESF) communities.
http://www.congrex.nl/05c22/

46. Chela-Flores, J. (2006a). The Abdus Salam International Advanced School on Space Weather (smr 1749), 2 May - 19 May 2006, Session on "Space weather at other planets, Thursday, May 18, 2006.
Lecture 1: Life on Earth: Its emergence, evolution and distribution in the solar system.
Lecture 2: Emergence and evolution of life on Earth. The environmental requirements.

47. Chela-Flores, J. (2006b). Evolution of the universe: From Astrophysics to Astrobiology.
One-day Meeting on "Origins" at Accademia dei Lincei, Roma, Monday, 22 May, 2006. By invitation of its organizer (Lincei Academician, Giancarlo Setti).

48. Chela-Flores, J. (2007a). Astrophysics and Astrobiology: A common search for our origins, Astrrophysics Group, SISSA. By invitation of its organizer (Andrea Ferrara), 13 February.

49. **European Geophysical Union (EGU 2007)**
Chela-Flores, J. (2007b) Life habitability in the solar system: testing the universality of biology on Europa with microprobes or landers ", 18 - 21 April 2007, Vienna, Austria. *Geophysical Research Abstracts,* Vol. **9**, 03863, 2007, SRef-ID: 1607-7962/gra/**EGU2007-A-03863**, European Geosciences Union.

50. M. Messerotti, G. Jerse, J. Chela-Flores: Solar Weather and Life, COST 724 Meeting, Session WG1, Sofia, 21-25 May 2007.

51. Chela-Flores, J. (2007c) Workshop on the Definition of a science-driven European scenario for space exploration, Athens Royal Olympic Hotel, 15-16 May 2007. dedicated to the setting of the scientific priorities for the ESA ExplorationProgramme at medium/long term. By invitation of ESF with support for the participation. Scientific organising Committee: M.Coradini, W.Carey, Y.Daglis, G.Haerendel, M.Heppener, G.Horneck, Y.Langevin, J.-P.Swings, N.Thomas, J.-C. Worms and J. Zarnecki.

53. **European Geophysical Union (EGU 2008)**
Chela-Flores, J., Kumar, N., Seckbach, J., Tewari, V. C. (2008) Distinguishing between signatures of past life and nonlife, *Geophysical Research Abstracts*, Vol. **10,** EGU2008-A-01158, 2008 EGU General Assembly, 15 April, Vienna, Austria.

54. Blanc, M. and The LAPLACE Consortium (2008). LAPLACE: a mission to Europa and the Jupiter System for ESA's Cosmic Vision Programme, *Geophysical Research Abstracts,* Vol. **10,** EGU2008-A-00000, 2008 EGU General Assembly, 16 April, Vienna, Austria.

55. Jerse, G., Messerotti, M., Gregorio, A., Chela-Flores, J. (2008) A Tentative Estimate of Space Paleoclimate Relevant to the Geospace in an Astrobiological Framework. Committee on Space Research, 37th COSPAR Scientific Assembly, Montreal, Canada, 13-20 July 2008.

56. Seckbach, J. Oren, A. Chela-Flores, J. (2008) The extreme environments and their microbes as models for extraterrestrial life. (Abstract EPSC2008-A-00576), 3rd European Planetary Science Congress. The Institute for Planetology of the Westfälische Wilhelms-Universität Münster, Germany, 21 – 26 September.

57. **European Geophysical Union (EGU 2009)**
Chela-Flores, J., Bhattacherjee, A. B., Dudeja, S., Kumar, N. and Seckbach, J. (2009) Can the biogenicity of Europa's surfical sulfur be tested simultaneously with penetrators and ion traps? *Geophysical Research Abstracts*, Vol. **11**, EGU2009-0, 2009, EGU General Assembly 2009. The Austria Centre, Vienna, 22 April.

58. Chela-Flores, J. (2009). L'origine della vita nell'universo, Darwin e la Scienza Moderna, UNESCO Office, Palazzo Zorzi,Venice 29 April 15:00 - 18:00.

59. Robert Gowen, Alan Smith, Richard Ambrosi, Olga Prieto Ballesteros, Simeon Barber, Dave Barnes, Chris Braithwaite, John Bridges, Patrick Brown, Phillip Church, Glyn Collinson, Andrew Coates, Gareth Collins, Ian Crawford, Veronique Dehant, Michele Dougherty, **Julian Chela-Flores,** Dominic Fortes, George Fraser, Yang Gao, Manuel Grande, Andrew Griffiths, Peter Grindrod, Leonid Gurvits, Axel Hagermann, Tim van Hoolst, Hauke Hussmann, Ralf Jaumann, Adrian Jones, Geraint Jones, Katherine Joy, Ozgur Karatekin, Günter Kargl, Antonella Macagnano, Anisha Mukherjee, Peter Muller, Ernesto Palomba, Tom Pike, Bill Proud, Derek Pullen, Francois Raulin, Lutz Richter, Keith Ryden, Simon Sheridan, Mark Sims, Frank Sohl, Joshua Snape, Paul Stevens, Jon Sykes, Vincent Tong, Tim Stevenson, Werner Karl, Lionel Wilson, Ian Wright, John Zarnecki (2009). Looking for Astrobiological

Signatures with Penetrators on Europa, in Physical and Engineering Sciences Exploratory Workshops, W08-115, co-funded by Life, Earth and Environmental Sciences: Biosignatures On Exoplanets; The Identity Of Life , 22-26 June 2009, Mulhouse, France . http://www.ictp.it/~chelaf/ESFsummary.pdf

60. Robert Gowen, Alan Smith, Richard Ambrosi, Olga Prieto Ballesteros, Simeon Barber, Dave Barnes, Andrew Bowyer, Chris Braithwaite, John Bridges, Patrick Brown, Phillip Church, Glyn Collinson, Andrew Coates, Gareth Collins, Ian Crawford, Veronique Dehant, Michele Dougherty, Jeremy Fielding, **Julian Chela-Flores,** Dominic Fortes, George Fraser, Yang Gao, Manuel Grande, Andrew Griffiths, Peter Grindrod, Leonid Gurvits, Axel Hagermann, Tim van Hoolst, Hauke Hussmann, Ralf Jaumann, Adrian Jones, Geraint Jones, Katherine Joy, Ozgur Karatekin, Günter Kargl, Antonella Macagnano, Anisha Mukherjee, Peter Muller, Ernesto Palomba, Andy Phipps, Tom Pike, Bill Proud, Derek Pullen, Francois Raulin, Lutz Richter, Keith Ryden, Simon Sheridan, Mark Sims, Frank Sohl, Joshua Snape, Paul Stevens, Jon Sykes, Vincent Tong, Tim Stevenson, Nigel Wells, Werner Karl, Lionel Wilson, Ian Wright, John Zarnecki (2009). An update on micro-penetrators for in-situ sub-surface investigations of Europa, Europa Jupiter System Mission (EJSM) Instrument Workshop, JPL and the Applied Physics Laboratory, Johns Hopkins University in Laurel, Maryland, July 15-17, 2009. http://www.ictp.it/~chelaf/NASAabstract09.pdf

61. Seckbach, J. and **Chela-Flores, J.** (2009). Astrobiology: From extremophiles in the Solar System to extraterrestrial civilizations, *Astronomy and Civilization*, Budapest – August. http://www.ictp.it/~chelaf/Budapest.pdf

62. Robert Gowen, Alan Smith, Richard Ambrosi, Olga Prieto Ballesteros, Simeon Barber, Dave Barnes, Andrew Bowyer, Chris Braithwaite, John Bridges, Patrick Brown, Phillip Church, Glyn Collinson, Andrew Coates, Gareth Collins, Ian Crawford, Veronique Dehant, Michele Dougherty, Jeremey Fielding, **Julian Chela-Flores**, Dominic Fortes, George Fraser, Yang Gao, Manuel Grande, Andrew Griffiths, Peter Grindrod, Leonid Gurvits, Axel Hagermann, Tim van Hoolst, Toby Hopf, Hauke Hussmann, Ralf Jaumann, Adrian Jones, Geraint Jones, Katherine Joy, Ozgur Karatekin, Günter Kargl, Antonella Macagnano, Anisha Mukherjee, Peter Muller1, Ernesto Palomba, Andy Phipps, Tom Pike, Bill Proud, Derek Pullen, Francois Raulin, Lutz Richter, Keith Ryden, Simon Sheridan, Mark Sims, Frank Sohl, Joshua Snape, Paul Stevens, Jon Sykes, Vincent Tong, Tim Stevenson, Nigel Wells, Lionel Wilson, Ian Wright, John Zarnecki (2009). In-situ Science on the surfaces of Ganymede and Europa with Penetrators, European Planetary Science Congress Abstracts, Vol. **4**, EPSC2009-xxxx, 2009 European Planetary Science Congress, Potsdam, Kongresshotel am Templiner See: 14 – 18 September. http://www.ictp.it/~chelaf/Gowen_abstract.pdf

63. Sheridan, S.; Barber, S.; **Chela-Flores, J**.; Morse, A.; Watson, J. and Wright, I. (2009). A penetrator deployed biogeochemistry package for the Europan surface In: European Planetary Science Congress , 14-18 September 2009, Potsdam, Germany.

64. **European Geophysical Union (EGU 2010a)**
Chela-Flores, J. (2010a). Can a future mission detect a habitable ecosystem on Europa, or Ganymede? EGU General Assembly 2010. The Austria Centre, Vienna, 7 May, oral presentation. http://www.ictp.it/~chelaf/EGU2010seamless.pdf

65. **European Geophysical Union (EGU 2010b)**
Chela-Flores, J. (2010a). Can a future mission detect a habitable ecosystem on Europa, or Ganymede? *Geophysical Research Abstracts*, Vol.**12**, EGU2010-0, 2010, EGU General Assembly 2010. The Austria Centre, Vienna, Friday 7th May 2010, 16.45-17.00.

66. Chela-Flores, J. (2010b). Are there habitable ecosystems in Europa and Ganymede*?* 3rd Workshop of the Italian Astrobiology Society, "When Darwin meets Copernicus". Duino Castle (Duino-Aurisina, Trieste, Italy), 26 - 28 May. http://www.ictp.it/~chelaf/IAS2010GW.pdf

67. Chela-Flores, J. (2010b). Alla ricerca della vita in ambienti estremi: L'Antartide e i satelliti Galileani di Giove. Convegno "Esplorare l'estremo", Giornate organizzate dalla sezione di Trieste del Museo Nazionale dell'Antartide, Università di Trieste, Sede del Convegno: Lega Navale Italiana, 21 maggio.

68. Chela-Flores, J. (2010c). Are there habitable ecosystems in Europa and Ganymede? 3rd Workshop of the Italian Astrobiology Society, "When Darwin meets Copernicus". Duino Castle (Duino-Aurisina, Trieste, Italy), 26 - 28 May.

69. Chela-Flores, J. (2010d). L'astrobiologia: Fisica alla ricerca della vita nell'universo. XXIV Olimpiade Italiana della Fisica, Trieste, 28 maggio 2010.

70. Chela-Flores, J. (2010a). El Tercer CapÍtulo del Libro de la Vida: La distribución de la vida en el Sistema Solar. Reunión con los directores docentes de colegios en Colombia con el fin de presentar el asocio del instituto IAC con el NAI. Viernes, 3 de Diciembre 2010.

71. Chela-Flores, J. (2010f). El láser en la lectura del libro de la vida: Eventuales beneficios biomédicos. Primera Escuela Internacional de Aplicaciones biomédicas del Láser. IVIC, Merida. Martes, 7 Diciembre 2010.

72. Seckbach, J and Chela-Flores, J (2011a). Microbial biodiversity: Implications for astrobiology. BioSystematics Berlin 2011. The Botanic Garden and Botanical Museum Berlin-Dahlem (Freie Universität Berlin) and the Museum für Naturkunde Berlin, 21-27 February 2011. http://www.biosyst-berlin-2011.de/

75. Seckbach, J and Chela-Flores, J (2011b). Biosignatures for detecting unicelluar and multicellular organisms in extreme environments Invited Paper: *Instruments, Methods, and Missions for Astrobiology XIV Conference OP409*, 21 - 25 August 2011, San Diego Convention Center, San Diego, California United States. (Presented by J. Seckbach.)

77. Seckbach J., Chela-Flores J. (2011c) Astrobiology: From Extremophiles in the Solar System to Extraterrestrial Civilizations. Paper preented in the Conference of Astronomy and Civilization in Budapest (Aug. 2009).

73. Chela-Flores, J. (2011a). Distribución de la vida en el Sistema Solar: Un problema de las ciencias físicas, de la tierra y de la vida. Seminar. Universidad Simon Bolivar, Caracas, Republica Bolivariana de Venezuela, 30 March.

74. **European Geophysical Union (EGU 2011)**
Chela Flores, J. (2011b). Evolutionary biomarkers on the icy galilean satellites: from bacteria to metazoans. *Geophysical Research Abstracts,* Vol. **13**, EGU2011-1219, 2011 EGU General Assembly Vienna, Austria from 03 – 08 April. http://www.ictp.it/~chelaf/EGU2011-JCF.pdf

76. Chela-Flores, J. and Seckbach, J. (2011) The Dry Valley Lakes, Antarctica: a key to evolutionary biomarkers on Europa and elsewhere (Invited Paper). Paper 8152-26 Time: 2:30 PM - 3:00 PM Conference 8152, *Instruments, Methods, and Missions for Astrobiology XIV*, 21-25 August 2011, San Diego Convention Center San Diego, California United States. (Presented by J. Seckbach.)

78. Chela-Flores, J. (2012). Closing Lecture of The International Doctorate Network in Particle Physics, Astrophysics and Cosmology "The search for extraterrestrial life in our solar system: The role of particle physics and space sciences in one of astrobiology's major objectives". University of Udine, 3 February. Invitation by Professor Alessandro de Angelis.

79. **European Geophysical Union (EGU 2012)**
Chela Flores, J. (2012). Landing on the Moon's farside: What are the geochemistry, astrobiology and instrumental issues*? Geophysical Research Abstracts* Vol. **14**, General

Assembly 2012, Vienna, Austria 25 April. http://wwwictp.it/~chelaf/3Abstract_EGU12.pdf

80. Chela-Flores, J. (2012c). Fluid mechanics and systems biology for understanding the cosmic distribution of life: A review. Proceedings of the First National Meeting of Fluid Mechanics (FLUIDOS 2012). 5 to 9 November, 2012 in Margarita Island, B.R. Venezuela.

81. Bhattacherjee , A. B., **Chela-Flores, J**. and Dudeja, S. (2013). From Chemical Evolution On Earth To Instrumentation Issues For Testing Systems Astrobiology On Exo-Worlds. International Workshop on Chemical Evolution and Origin of Life. ITT Roorkee, 21 – 23 March 2013.

82. **European Geophysical Union (EGU 2013)**
Chela Flores, J. (2013). Systems astrobiology for a reliable biomarker on exo-worlds. *Geophysical Research Abstracts* Vol. **15**, EGU2013-1327-1, 2013 EGU General Assembly, 9 April. http://www.ictp.it/~chelaf/ss314

83. Seckbach, J. and Chela-Flores, J. (2013). Life at extreme solar system environments and beyond: A minisummary. Conference at the Pedagogic Faculty. Catholic University, Ružomberok, Slovakia, March 21 - 22. http://www.ictp.it/~chelaf/Slovak_Proceedings2013.pdf

84. Bhattacherjee, A. B., **Chela-Flores, J.** and Dudeja, S. (2013). From chemical evolution on Earth to instrumentation issues for testing systems astrobiology on exo-worlds. International Workshop on Chemical Evolution and Origin of Life. ITT Roorkee, 21 – 23 March 2013.

85. Chela-Flores, J. (2013d). Origen y distribucion de la vida en sistemas solares. XVI Jornadas de Biologia y Quimica. Universidad Catolica Andres Bello, Caracas, 27 Noviembre 2013. A video conference at http://www.ictp.it/~chelaf/ss332.

86. Crawford, I.A., Bowles, N., Jaumann, R., Joy, K., Anand, M., Besse, S., Bottke, B., Bray,V., Burchell, M., Carpenter, J., Chaussidon, M., **Chela-Flores, J.,** Coates, A., Cockell, C., D'Arrigo, P., de Vera, J.-P., Falcke, H., Fernandes, V. A., Fritz, J., Gao, Y., Ghent, R., Glotch, T., Grady, M., Grande, M., Grindrod, P., Gutiérrez, J., Hiesinger, H., Klein-Wolt, M., Knapmeyer, M., Kring, D., Magna, T., Marty, B., Monchieri, E., Osinski, G., Smith, A., Spohn, T., Teanby, N., van Gasselt, S., Wieczorek, M., Wright, I., Werner, S., van Westrenen, W., Wilson, L., Wimmer-Schweingruber, R. F., Wuennemann K. and Wurz, P. (2013). Lunar Science as a Window into the Early History of the Solar System, ESA Science and Technology, Cosmic Vision. Science Themes for the L2 and L3 missions. Presentation meeting 3-4 September 2013 Institut Océanographique de Paris, France. http://www.ictp.it/~chelaf/ESA_White_Papers_for_Science_Themes_for_L2_and_L3_Missions.pdf

87. Chela-Flores, J. Andrés Cicuttin, María Liz Crespo and Claudio Tuniz (2013). Biogeochemical fingerprints of life: From Antarctica ecosystems to the Galilean moons. A videoconference at the International Conference on Biogeosciences. Universidad Central de Las Villas, Cuba, November, 4-7. The podcast of the complete 26-minute talk is available at http://www.ictp.it/~chelaf/chelaflores.html

88. Chela-Flores, J. (2013e). 1. Hace 3.800 millones de años. 2. La búsqueda de nuestros orígenes en el polvo de las estrellas: Viajes imaginarios en el cosmos y hacia nuestro pasado.Two videos from ICTP iTunes U presented aat the official opening of AstroCaibarien-2013: National Astronomy Meeting, Cuba, November 8.

89. Seckbach, J. and Chela-Flores, J. (2013). Life at extreme solar system environments and beyond: A minisummary. Conference at the Pedagogic Faculty. Catholic University.

90. Seckbach, J. and Chela-Flores, J. (2014). Science and theology: the wonder of rationalizing and interpreting the cosmos. Talk presented by J. Seckbach at Poprad, Slovakia, April. Seventh International science conference: The social message of John Paul II. For today's world "The university as a place of dialogue", 29 - 30 April.

91. Seckbach, J. and Chela-Flores, J. (2015a). Microorganisms' life in thermophilic environments: Geothermal energy in unexplored habitats of the Solar System. Meeting at Reykjavik, Iceland, 18 - 19 February.

92. Seckbach, J. and Chela-Flores, J. (2015b).Testing Habitability of Unexplored Environments the Outer Solar System. Instruments, Methods, and Missions for Astrobiology XVII, 9 - 13 August.

93. Chela-Flores, J. (2015). Beyond JUICE: Searching for habitability of ocean moons. Life in a Cosmic Context, 5th Workshop, Italian Astrobiological Society, Trieste, September 15 – 17.

94. Chela-Flores, J. (2018). The origin of life on Earth and other worlds: A preparatory workshop for ESOF 2020. Wednesday 24 October ICTP, Trieste. Observer.

95. Chela-Flores, J. (2020). Habitabilidad de Mundos Oceanicos en nuestro Sistema Solar. Invitado como ponente especial y magistral al quinto Congreso Digital Internacional de Astrobiología. Bogota, Colombia, 11-14 noviembre.

96. Sandalinas, J. and Chela-Flores, J. (2021). How Law And Ethics Would Need To Be Adapted To The Discovery Of Extraterrestrial Life? 50th IAA Symposium On The Search For Extraterrestrial Intelligence (SETI). The Next Steps (A4) (Paper ID: 66167). SETI 2: SETI and Society (2). 72nd International Astronautical Congress, Dubai, 25-29 October.

(b) Relation between astrobiology and the humanities

1. Chela-Flores, J. (1996). Cosmological models and appearance of intelligent life on Earth: The phenomenon of the eukaryotic cell. Invited lecture for the International Symposium "Reflections on the birth of the Universe: Science, Philosophy and Theology". Villa Monastero, Varenna, Italy. 24-26 September.

2. Chela-Flores, J. (1998a). UNESCO Chair of Philosophy (Caracas, Venezuela), with the additional support of the UNESCO-sponsored programme Talven (Talento Venezolano). Three lectures scheduled on the subject: *Marco cultural de la relacion Hombre/Universo: 1. ¿Cuándo y cómo se originó la vida en el Sistema Solar? 2. ¿Cuál es el origen de la humanidad? 3. ¿Dónde existe vida en el universo?* February, 9-20.

3. Chela-Flores, J. (1998b). Search for the Ascent of Microbial Life towards Intelligence in the Outer Solar System. In: International Symposium "*Origin of intelligent life in the universe*. Centro di Cultura Villa Monastero, Varenna, Italy. 28 September till 1 October.

4. Chela-Flores, J. (1998c). La relazione vita-universo: fra fede e ragione. Invited lecture at the *"X Cattedra dei non credenti: orizzonti e limiti della scienza",* promoted by Cardinal Carlo Maria Martini. Aula Magna, Universita' Statale, Milan. November 5.

5. Chela-Flores, J. (2003a). Impact of astrobiology on traditional cultural values and religion. Symposium "Science, Religion and Values". Adriatico Guest House, Grignano, Trieste, March 7, 2003.

6. Chela-Flores, J. (2003b). Evolution of intelligent behavior: Does complex chemistry offer evidence of purpose? Fitness of the cosmos for life: Biochemistry and fine-tuning. Conference sponsored by the John Templeton Foundation, Harvard-Smithsonian Center for Astrophysics, October 11-12, 2003. http://www.templeton.org/biochem-finetuning/participants.html

(c) Physical Sciences

STRONG, ELECTROWEAK AND GRAVITATIONAL INTERACTIONS

1. Aragone, C. and Chela-Flores, J. (1971). Properties of the pure strong gravity field. Meeting on Fields and Gravitation. ICTP, Trieste, Italy, 13-16 July. ICTP Report IC/71/144.

2. Chela-Flores, J. and Herrera, L.A. (1972). Teoria f-g**.** First Latin American Meeting on Relativity and Gravitation, Montevideo, Uruguay, 2-5 October. Summaries published in a CLAF report.

3. Chela-Flores, J., Aragone, C., and Restuccia, A. (1978). On the Baker-Campbell-Housdorff formula for the SU(2) supergroup. Applied Mathematics Symposium, Dublin Institute for Advanced Studies, Dublin, Ireland, 20-21 December.

4. Chela-Flores, J., Nuñez, L., and Restuccia, A. (1979). Algunos resultados de un nuevo formalismo de supergravedad. Annual Meeting, ASOVAC, Barquisimeto, 25-30 November. Acta Cient. Venez. **30**, Supl. 1, 61.

5. Aragone, C., Chela-Flores, J., and Restuccia, A. (1979a). Geometria local de la supergravedad conforme. Annual Meeting, ASOVAC, Barquisimeto, 25-30 November. Acta Cient. Venez. **30,** Supl.1, 61.

6. Aragone, C., Chela-Flores, J., and Restuccia, A. (1979b). La formula BCH para el supergrupo SU(2). Annual Meeting, ASOVAC, Barquisimeto, 25-30 November. Acta Cient. Venez. **30,** Supl. 1, 62.

7. Chela-Flores, J. (1980). Strong Gravity. Meeting for the Conmemoration of the Tenth Anniversary of the Foundation of Simon Bolivar University, Caracas, January.

8. Chela-Flores, J. (1982a). A many-body model of a parton-like system. Panamerican Symposium on Particle Physics and Technology, Cocoyoc, Morelos, Mexico, 5-7 January.

9 Chela-Flores, J. (1982b). Abrupt onset of scaling violations. XXI High Energy Physics Conference, Paris, France, 26-31 July. Contribution No. 0007.

10. Chela-Flores, J. (1982c). Test for complete breakdown of discrete symmetry in D-D. XXI High Energy Conference, Paris, France, 26-31 July. Contribution No. 0050.

11. Chela-Flores, J. (1982d). Hacia la ruptura completa de simetrias discretas. Annual Meeting, ASOVAC, Caracas, 21-26 Noviembre. Acta Cient. Venez. **33**, Supl. 1, 159.

12. Varela, V. and Chela-Flores, J. (1982). Gravitacion fuerte. Annual Meeting, ASOVAC, Caracas, 21-26 Noviembre. Acta Cient. Venez. **33,** Supl. 1, 159.

13. Chela-Flores, J. and Varela, V. (1982). IV Latin American Symposium on Relativity and Gravitation, Caracas, 5-11 December.

14. Chela-Flores, J. (1983). Violacion de escalamiento. Annual Meeting, ASOVAC, Caracas, 24-28 October. Acta Cient. Venez. **34,** Supl. 1, 196.

QUANTUM LIQUIDS AND SOLIDS

1. Chela-Flores, J. (1972). Vortices en superconductores de tipo II. Annual Meeting, Venezuelan Association for the Advancement of Science (ASOVAC), Maracaibo, 30May-3 June. Acta Cient. Venez. **23,** Supl. 1, 43.

2. Chela-Flores, J. (1974). Vortices en helio II. Annual Meeting, ASOVAC, Maracaibo, 7-11 October. Acta Cient. Venez. **25,** Supl. 1, 18.

3. Chela-Flores, J. (1975). Estado base del helio liquido II. Annual Meeting, ASOVAC, Caracas, 27-31 October. Acta Cient. Venez. **26,** Supl. 1, 47.

4. Chela-Flores, J. (1976). Orden atomico en helio liquido II. Annual Meeting, ASOVAC, Puerto La Cruz, 8-12 November. Acta Cient. Venez. **27,** Supl. a, 88.

5. Chela-Flores, J. (1977a). Results from a gauge theory of superfluidity in ^{4}He. International Symposium on Quantum Fluids and Solids. Sanibel Island, Florida, USA, 24-27 January.

6. Chela-Flores, J. (1977b). Atomic order in liquid helium II. Annual Meeting of the APS/AAPT, Chicago, USA, 7-11. Bulletin American Phys. Soc. **22,** No. 1, 51.

7. Chela-Flores, J. and Alonso, V. (1978). Neutrino pairing in the cosmic background. Ninth Texas Symposium on Relativistic Astrophysics, Munich, West Germany, 13-19 December.

8. De Lisa Uzcanga, F. and Chela-Flores, J. (1979). Superfluidez anisotropica de la materia hadronica. Formulacion matematica. Annual Meeting, ASOVAC, Barquisimeto, 25-30 November. Acta Cient. Venez**. 30,** Supl. 1, 61.

9. Chela-Flores, J. and De Lisa, F. (1980). Anisotropic superfluidity of hadronic matter. XX High Energy Physics Conference, Madison, Winsconsin, USA, 17-23 July. Contribution No. 4.

10. Guerrero, L.E. and Chela-Flores, J. (1980). Superfluidez en pulsares. Annual Meeting, ASOVAC, Merida. Acta Cient. Venez. **31,** Supl. 1, 118.

11. Ghassib. H.B. and Chela-Flores, J. (1983). Towards a comprehensive theory for He II. 75th Jubilee Conference on Helium-4, St. Andrews, Scotland, 1-5 August.

12. Chela-Flores, J., Martin, P., and Rodriguez-Nuñez, J.J. (1988). A new effect on the critical temperature in non rare earth ceramic superconductors. An Adriatico Research Conference: Towards the understanding of high temperature superconductors. Trieste, Italy, 26-29 July.

BIOPHYSICS

1. Chela-Flores, J. (1984). Phonon pairing in nucleic acids. IV Latin American School of Quantum Chemistry. Caracas, 19-30 November.

2. Chela-Flores, J. (1986). Modelling chromatin fibers: Insight into genetic disorders. Fifth International Conference on Mechanics in Medicine and Biology. Bologna, 1-5 July.

3. Vericat, F. and Chela-Flores, J. (1986). Cromatina, materia condensada y modos colectivos. XV Scientific Meeting of the Argentinian Biophys. Soc., Argentina, 1-3/12/86.

4. Chela-Flores, J. (1987). Hacia una biologia colectiva del gen. Meeting of Latin American Scientists. Centenary Celebration of the Birth of Professor Bernardo Alberto Houssay, Buenos Aires, Argentina, 20-24 April.

5. El-Sayed, E.M., Chela-Flores, J. and Wang, X.Y. (1988). The propagation of the nerve impulse under the effect of a magnetic field. First Arab Conference on Biophysics, Cairo Egypt, 28-30 November, pp. 95-102.

6. Chela-Flores, J. (1989a). Fenomenos colectivos en genetica molecular. Andean Program of Biotechnology: Genetic Manipulation with Protoplasts. Caracas, 8-19 May.

7. Chela-Flores, J. (1989b). Evolution and epigenesis in a qualitative description of molecular genetics. Int. Conf. Evolution, Epigenesis, and Cognition. Solignac, France,18-25/9/89

8. Liquori, A.M., Chela-Flores, J., and Florio, A. (1989). The kinetics of genetic expression: Heat-shock proteins. Sardinia Symposium on Advances in Biotechnology Control of Gene Expression, Sassari, Italy, 18-23 May. Contribution B28, p.126.

9. Chela-Flores, J. (1994a). Some physical problems in biology. Seminar at the School of Theoretical Physics, Dublin Institute for Advanced Studies, Dublin 4, Ireland. 1 June.

10. Chela-Flores, J. (1994b). Beyond protein folding: Towards the basis of DNA bending and folding. Lecture delivered at the Sixth College of Biophysics: Experimental and Theoretical Aspects of Biomolecules. Trieste, 26 September-14 October; lecture delivered on October 13.

(d) Science and Society

1. Chela-Flores, J. (1980). The focus of physics on science and technology for development: A personal point of view. Workshop of the American Physical Society, Baddeck, Nova Scotia, Canada, 15-19 October.

2. Symposium on Interamerican University Cooperation for Economic and Social Development. Read Chancellor A.J. Villegas' lecture on "North-South Cooperation", Miami, Florida, 10-12 November, 1980.

3. Chela-Flores, J. (1981). El enfoque de la fisica sobre la ciencia y la tecnologia para el desarrollo. Un punto de vista personal. Meeting for the consideration of the creation of a regional centre for physics. Bogota, Colombia, 12-17 January.

4. Symposium on International University Cooperation. Read Chancellor A.J. Villegas' lecture "On a possible new mechanism for inter-American university cooperation. Ajijic, Guadalajara, Mexico, 6-7 February, 1981.

5. Chela-Flores, J. (1983a). Investigacion en los institutos de educacion superior de nuestra region en el contexto de la crisis economica. XI Meeting for the reform and improvement of education (GULERPE). Caracas, 22-25 February.

6. Chela-Flores, J. (1983b). Organizacion y procedimientos de la investigacion cientifica y tecnologica en la Universidad Simon Bolivar. Meeting of the research directors of universities related to the CINDA Group. Guayaquil, Ecuador, 17-18 October.

7. Chela-Flores, J. (1984). The contribution of IDEA to development through its Education Centre. International Conference on Physics for Development. Trieste, Italy, 8-12/10/84.

8. Meeting of the Third World Academy of Sciences. Acted as Scientific Secretary during the evening meeting of July 8. Trieste, Italy, 5-9 July, 1985.

9. Chela-Flores, J. (1985). Islands of excellence as catalysts for university cooperation. Colloquium-La cooperazione universitaria Bilancio e prospettive delle esperienze Europa-Paesi in via di sviluppo. Trieste, Italy, November.

10. *South-South Cooperation in Science*. Organized by the Third World Academy of Sciences. Scientific Secretary of the Working Group of Latin America. Trieste, Italy, October 1986.

11. Chela-Flores, J. (1988). Verso uno sviluppo scientifico regionale dell'America Latina: Un punto di vista personale. 2nd International Colloquium on University Cooperation with Developing Countries. Bari, Italy, 16-19 May.

12. Chela-Flores, J. (1989). Towards a regional scientific development of Latin America: A personal point of view. Round-table discussion on "Science, Technology, Science Education in the Development of the South". A paper written by Professor Abdus Salam for a meeting of the South-South Commission. Trieste, Italy, 8 August.

13. Chela-Flores, J. (2004). TWAS 15th General Meeting, 23-24 November 2004, Trieste, Italy.

IV. PROMOTION OF SCIENCE:

(a) Collaboration with Latin America

Latin America Pugwash Movement, *Founding Member,* 1981 by invitation of Marcel Roche, http://www.ictp.it/~chelaf/PugwashJCF.pdf. Subsequently, in 1995, the **Nobel Peace Prize** was awarded jointly to Joseph Rotblat and Pugwash Conferences on Science and World Affairs "*for their efforts to diminish the part played by nuclear arms in international politics and, in the longer run, to eliminate such arms*".

Review of contribution in the general context of Venezuela

Science and technology in Venezuela.
https://en.wikipedia.org/wiki/Science_and_technology_in_Venezuela

Argentina

Chela-Flores, J. (1987). Primer Encuentro de Cientificos de America Latina. The Latin American Academy of Science first Plenary Meeting, convoked to celebrate the Hundreth Anniversary of Latin America's first Nobel Prize Laureate, Bernardo A. Houssay. Buenos Aires, 21 April.

Colombia

Chela-Flores, J. (1981). El enfoque de la fisica sobre la ciencia y la tecnologia para el desarrollo. Un punto de vista personal. Meeting for the consideration of the creation of a regional centre for physics. Bogota, Colombia, 12-17 January. Accompanied the Minister of Science of Venezuela Dr. Raimundo Villegas. The Deputy Director of ICTP, Professor Paolo Budinich attended.

Chela-Flores, J. (2010). El Tercer CapÍtulo del Libro de la Vida: La distribución de la vida en el Sistema Solar. Reunión con los directores docentes de colegios en Colombia con el fin de presentar el asocio del instituto IAC con el NAI, Estados Unidos Viernes, 3 de Diciembre 2010.

Cuba

BIOGEOSCIENCES-2013
November 4th-9th, 2013. Venues: Universidad Central ''Marta Abreu'' de Las Villas (Santa Clara) and Centre for Research of Coastal Ecosystems (Cayo Coco). Cuba. Local Organizers: Rolando Cardenas, Reinaldo Rojas, Adan Zuñiga and Vicente Berovides.
Member of the International Advisory Board.

Chela-Flores, J. (2013). Biogeochemical fingerprints of life: From Antarctica ecosystems to the galilean moons. A videoconference at BIOGEOSCIENCES-2013. International Conference on Biogeosciences. Modeling natural environments: From Earth's ecosystems to exoplanets. Organized by Universidad Central de Las Villas, Cuba, November, 4-7, 2013,
http://www.ictp.it/~chelaf/ss324

BIOGEOSCIENCES-2017
October 23th-27th, 2017. Venues: Universidad Central ''Marta Abreu'' de Las Villas (Santa Clara) and Centre for Research of Coastal Ecosystems (Cayo Coco). Cuba. Local Organizer: Rolando Cardenas, **Member of the International Organizing Scientific Committe.**

BG-19: III INTERNATIONAL CONFERENCE ON BIOGEOSCIENCES.
A conference on environmental engineering, mathematical modeling of natural environments, planetary science, and environmental sciences. Cuba, June 23-30, 2019.
Member of the Program Committee.

Ecuador

Chela-Flores, J. (1983). Organizacion y procedimientos de la investigacion cientifica y tecnologica en la Universidad Simon Bolivar. Meeting of the research directors of universities related to the CINDA Group. Guayaquil, Ecuador, 17-18 October.

Mexico

Symposium on International University Cooperation. Read Chancellor A.J. Villegas' lecture "On a possible new mechanism for inter-American university cooperation. Ajijic, Guadalajara, Mexico, 6-7 February, 1981.

Peru

Chela-Flores, J. (2016). Video participation in the First Latin American Congress of Astrobiology, 3 to 5 August, Lima Perú (I-CLA).

Venezuela, Bolivarian Republic

Chela-Flores, J. (1983). Investigacion en los institutos de educacion superior de nuestra region en el contexto de la crisis economica. XI Meeting for the reform and improvement of education (GULERPE). Caracas, 22-25 February.

Chela-Flores, J. (1998). UNESCO Chair of Philosophy (Caracas, Venezuela), with the additional support of the UNESCO-sponsored programme Talven (Talento Venezolano). Three lectures scheduled on the subject: *Marco cultural de la relacion Hombre/Universo: 1. ¿Cuándo y cómo se originó la vida en el Sistema Solar? 2. ¿Cuál es el origen de la humanidad? 3. ¿Dónde existe vida en el universo?* February, 9-20.

Chela-Flores, J. (2005). Bioseñales en el Sistema Solar. By invitation of Dean Dr. Yaquelin Loyo de Sardi and Professor Nelson Falcón, at the *Astrobiology Conference: "Ab Inition: Orígenes del Universo, la Tierra, la Vida y la Inteligencia"*, Facultad Experimental de Ciencias y Tecnología, Universidad de Carabobo, Valencia, Venezuela. Coordinator: Professor Nelson Falcón. With technical support of ICTP (Mr. Marco Calamandrei) and Universidad de Carabobo (Professors Ildemaro Castañeda and Antonio Felipe Castañeda, Lic. Sumaya Pérez, Rubén Cheng and Fabián Robledo), 7 July 2005.

Chela-Flores, J., Juan José Salaya, Benjamín Scharifker, Gianfranco Passarriello, José Luís Feijoo, Emilio Hernández and Gloria Buendía (2005). *Jornadas Galileanas – USB*. Foro de los Decanos de Investigación y Desarrollo de la Universidad Simón Bolívar, 1975-2005, Coordinator Klaus Jaffe,

President, Sociedad Galileana. With the technical support of ICTP (Mr. Marco Calamandrei) and USB (Mr. Nicola Baglieve), 14 March.

Chela-Flores, J. (2010). El láser en la lectura del libro de la vida: Eventuales beneficios biomédicos. Primera Escuela Internacional de Aplicaciones biomédicas del Láser. IVIC, Merida. Martes, 7 Diciembre 2010.

Chela-Flores, J. (2011). Distribución de la vida en el Sistema Solar: Un problema de las ciencias físicas, de la tierra y de la vida. Videoconference/Seminar. Universidad Simon Bolivar, Caracas, Republica Bolivariana de Venezuela, 30 March.

Chela-Flores, J. (2012). Systems biology and fluid mechanics for understanding the cosmic distribution of life. A plenary video-conference at the First National Meeting of Fluid Mechanics (FLUIDOS2012). 5 to 9 November, 2012 in Margarita Island, República Bolivariana de Venezuela.

Chela-Flores, J. (2013a). 1. Hace 3.800 millones de años. 2. La búsqueda de nuestros orígenes en el polvo de las estrellas: Viajes imaginarios en el cosmos y hacia nuestro pasado. AstroCaibarien-2013: National Astronomy Meeting, Las Villas, Cuba. November 8.

Chela-Flores, J. (2013b). Origen y distribución de la vida en sistemas solares. Jornadas del Departamento de Biología y Química de la Universidad Catolica Andres Bello, Caracas, República Bolivariana de Venezuela. 27 Noviembre.

Chela-Flores, J. (2014). Video participation in the graduate course of Dr. Leonardo Trujillo, Center of Physics, Venezuelan Institute for Scientific Research (IVIC).

Chela-Flores, J. (2017). Universalidad de la biología: Biomarcadores químicos y físicos at IVIC, Altos de Pipe, Caracas 31 March, invited by the group of Bioinformatics and Computational Biology.

(b) Additional international cooperation

2008

Team Member of a preliminary proposal for a mission to Europa and the Jupiter system, entitled Laplace (http:/www.ictp.it/~chelaf/Laplace.pdf). The original LAPLACE proposal was elaborated and supported by a team of 359 scientists from 15 countries. The list of team members is available at: *LAPLACE Team Members:* http://www.ictp.it/~chelaf/ss164.html.

2009

Robert Gowen, Alan Smith, Richard Ambrosi, Olga Prieto Ballesteros, Simeon Barber, Dave Barnes, Chris Braithwaite, John Bridges, Patrick Brown, Phillip Church, Glyn Collinson, Andrew Coates, Gareth Collins, Ian Crawford, Veronica Dehant, Michele Dougherty, **Julian Chela--Flores**, Dominic Fortes, George Fraser, Yang Gao, Manuel Grande, Andrew Griffiths, Peter Grindrod, Leonid Gurvits, Axel Hagermann, Toby Hopf, Hauke Hussmann, Ralf Jaumann, Adrian Jones, Geraint Jones, Katherine Joy, Ozgur Karatekin, Günter Kargl, Antonella Macagnano, Anisha Mukherjee, Peter Muller, Ernesto Palomba, Tom Pike, Bill Proud, Derek Pullen, Francois Raulin, Lutz Richter, Simon Sheridan, Mark Sims, Frank Sohl, Joshua Snape, Jon Sykes, Vincent Tong, Tim Stevenson, Lionel Wilson, Ian Wright, John Zarnecki: Declaration of Interest in science instrumentation in response to the Announcement of Opportunity for Europa Jupiter System Mission (EJSM/Laplace) Cosmic Vision Candidate: Surface Element Penetrators**,** May 2009.
http://www.mssl.ucl.ac.uk/planetary//missions/Cosmic_Vision_EJSM_Penetrators_DOI.pdf

2010

External Examiner of a Ph.D. Thesis:
Mr. Peter Weiss, "System Study and Design of a Multi-probe Mission for Planetary in-situ Analysis", The Hong Kong Polytechnic University, 22 February 2010. (Videoconference.)

2011

Member of **LunarNet,** a proposal to the European Space Agency (ESA) in response to the 2010 call for medium sized missions opportunity in ESA's Science Programme for a launch in 2022.

2012

The Closing Lecture of the International Doctorate Network in Particle Physics and Cosmology.
The search for extraterrestrial life in our solar system: The role of particle physics and space sciences in one of astrobiology's major objectives. The International Doctorate Network in Particle Physics and Cosmology. (University of Udine, 23 January-3 February 2012). Friday, 3 February 2012.

2013

Lunar Science as a Window into the Early History of the Solar System.

Endorser of a White Paper submitted in response to ESA's Call for Proposals for Cosmic Vision L2/3 Science Themes (for the decade of the 2020s). Crawford, I.A., Bowles, N., Jaumann, R., Joy, K., Anand, M., Besse, S., Bottke, B., Bray,V., Burchell, M., Carpenter, J., Chaussidon, M., **Chela-Flores, J.,** Coates, A., Cockell, C., D'Arrigo, P., de Vera, J.-P., Falcke, H., Fernandes, V. A., Fritz, J., Gao, Y., Ghent, R., Glotch, T., Grady, M., Grande, M., Grindrod, P., Gutiérrez, J., Hiesinger, H., Klein-Wolt, M., Knapmeyer, M., Kring, D., Magna, T., Marty, B., Monchieri, E., Osinski, G., Smith, A., Spohn, T., Teanby, N., van Gasselt, S., Wieczorek, M., Wright, I., Werner, S., van Westrenen, W., Wilson, L., Wimmer-Schweingruber, R. F., Wuennemann K. and Wurz, P. (2013). Lunar Science as a Window into the Early History of the Solar System, a White Paper submitted in response to ESA's Call for proposals for Cosmic Vision L2/3 Science Themes. http://www.ictp.it/~chelaf/Moon_WP_final.pdf

My acceptance to participate was motivated by my recent ICTP publication: A case for landing on the moon's farside to test nitrogen abundances. *International Journal of Astrobiology* **11**, 61-69.

2016

Endorser of a White Paper submitted in response to the call for new scientific ideas in ESA's science programme: *Lunar Palaeoregoliths as Recorders of Solar System History*. Principal Contact: Professor I.A. Crawford, Department of Earth and Planetary Sciences, Birkbeck College London, UK (2016).

(c) Outreach

Texts in collaboration with Cristina Serra, October 2013.

(An 8-minute video in high definition):

English

A search for our origins in stardust (558 MB on disk).

http://www.ictp.it/~chelaf/2013_10_17_ChelaFlores_Inglese_YTHD.mp4

https://www.youtube.com/watch?v=9XHHWGPajMs

Italian

Alla ricerca delle nostre origini nel polvere delle stelle (558 MB on disk).

http://www.ictp.it/~chelaf/2013_10_17ChelaFloresItaliano_YTHD.mp4

https://www.youtube.com/watch?v=_8lBlWOCMO8

Spanish

La búsqueda de nuestros orígenes en el polvo de las estrellas (558 MB on disk).

http://www.ictp.it/~chelaf/2013_10_17ChelaFloresSpagnolo_YTHD.mp4

https://www.youtube.com/watch?v=v_EHNW37GqY

Texts in collaboration with Cristina Serra, September 2011.

(A 6-minute video in high definition):

English

3,8 billion years ago (333 MB on disk):

http://www.ictp.it/~chelaf/JCF_NDR_English.mp4

Italian

3,8 miliardi di anni fa (333 MB on disk):.

http://www.ictp.it/~chelaf/JCF_NDR_Italian.mp4

Spanish

Hace 3,800 millones de años (336 MB on disk):

http://www.ictp.it/~chelaf/JCF_NDR_Spanish.mp4

(d) Video of a talk on Astrobiology

Organizers: Instituto de Astrobiología de Colombia and La Universidad del Atlántico on 12 November 2020:

https://youtu.be/C0TbFbr6tn8

(e) Organization of physics events

Biophysics

1. FIFTH COLLEGE ON BIOPHYSICS.
Methods and Experimental Techniques in Biophysics.
28 September-23 October, 1992.
Directors: H. Farach J. N. Onuchic and S. Mascarenhas.

2. SIXTH COLLEGE ON BIOPHYSICS.
Experimental and Theoretical Aspects of Biomolecules.
26 September-14 October, 1994.
Directors: H. Farach J. N. Onuchic and S. Mascarenhas.

3. SEVENTH COLLEGE ON BIOPHYSICS.
Structure and Function of Biopolymers: Experimental and Theoretical Techniques.
4-26 March, 1996. Directors: H. Farach J. N. Onuchic and S. Mascarenhas.

4. WORKSHOP ON THE STRUCTURE OF BIOLOGICAL MACROMOLECULES.
16-27 March, 1998.
Directors: P. Carloni, D. Lamba and S. Pongor.

5.EIGHTH COLLEGE ON BIOPHYSICS.
From molecular genetics to structural biology. 1-12 October, 2001.
Directors: P. Carloni, D. Lamba, A. Libchaber and S. Pongor.

• Director of an ICTP Symposium

ASYMMETRY IN BIOMOLECULES: PHARMACOLOGICAL, PHYSICAL, CHEMICAL AND BIOLOGICAL CONSEQUENCES (*Mini-symposium.)*,
13-15 March 1996. Directors: J. Chela-Flores and K. R. K. Easwaran.

Medical physics

• Local Organization of ICTP Training Events

1. COLLEGE ON MEDICAL PHYSICS.
Imaging and radiation protection. 31 August-18 September, 1992. Directors: H. Farach and S. Mascarenhas.

2. DOSIMETRY AND DOSE REDUCTION TECHNIQUE IN DIAGNOSTIC RADIOLOGY
(*Training Course)*.
16-25 March 29, 1994. Organizing Committee: A. Benini, L. Bertocchi, H.M. Kamer and K. Schnuer.

3. COLLEGE ON MEDICAL PHYSICS
Radiation protection and imaging techniques.
5-23 September, 1994. Directors: A. Benini, R. Cesareo, H. Farach and S. Mascarenhas.

4. SECOND SCHOOL IN RADIOPHYSICS.
Diagnostic Radiology. 23-28 October, 1995. Directors: A. Benini, L. Bertocchi, P. Dandy, K. Jessen, F. Milani, and A. Noel.

5. COLLEGE ON MEDICAL PHYSICS.

9-27 September 1996. Directors: A. Benini, R. Cesareo, S. Mascarenas and P. Sprawls. Co-Local Organizer: L. Bertocchi.

• Local Organization of an ICTP Conference

GIORGIO ALBERI MEMORIAL. IV International Conference on Applications of Physics in Medicine and Biology. Advanced detectors or medical imaging. 21-25 September, 1992.

•Academic Support of Other Medical Physics Events

GIORGIO ALBERI MEMORIAL.
Fifth International Conference on Applications of Physics in Medicine and Biology. Synchrotron Radiation for Medical Physics.
2-6 September, 1996. (Member of the Organizing Committee).

Neurophysics

• Local Organization of ICTP Training Events

1. COLLEGE ON NEUROPHYSICS.
Object recognition by man and machine:
Methods and tests of cognitive neuropsychology and neural computations.
2-27 March, 1992.
Directors: Antonio Borsellino, Jon Kaas and Obaid Siddiqi.

2. ANTONIO BORSELLINO COLLEGE OF NEUROPHYSICS.
The Processing and Use of Sensory Information in Biological Systems.
(15 May-9 June, 1995).
Directors: G. Geiger, J. Kaas and O. Siddiqi.

3. SECOND ANTONIO BORSELLINO COLLEGE OF NEUROPHYSICS.
Plasticity of Sensory-Motor Systems.
18 - 22 May, 1998.
Directors: M. Diamond, J. Kaas and W.C. Hall.

4. THIRD ANTONIO BORSELLINO COLLEGE OF NEUROPHYSICS.
Evolution of intelligent behaviour.
23 April-May 4, 2001.
Directors: M. Diamond and Leah Krubitzer.

• Local Organization of ICTP Symposia

1. DYNAMIC PROPERTIES OF RECEPTIVE FIELDS AND PLASTICITY OF PROCESSING SYSTEMS *(Symposium)*
17-19 May, 1995.
Directors: G. Geiger, J. Kaas and O. Siddiqi.

2. NEW APPROACHES TO THE PLASTICITY OF SENSORY-MOTOR SYSTEMS
(*Mini-symposium)* 25 May - 2 June, 1998. Directors: M. Diamond, J. Kaas and W.C. Hall.

(f) Astrobiology events organized at the ICTP

Conferences suggested by Abdus Salam in May 1991

1. CONFERENCE ON CHEMICAL EVOLUTION.
Chemical Evolution: Origin of Life. Trieste, Italy, October 26-30, 1992. Director Cyril Ponnamperuma, Organizer Julian Chela-Flores.
Proceedings: A. Deepak Publishing, Vol. **135,** 1993: Hampton, Virginia, USA. http://www.stcnet.com/adpub/135.html

2. SECOND TRIESTE CONFERENCE ON CHEMICAL EVOLUTION.
Self-Organization of the Macromolecules of Life. Trieste, Italy, October 25-29, 1993. Director Cyril Ponnamperuma, Organizer Julian Chela-Flores.
Proceedings: A. Deepak Publishing, Vol. **139,** 1995: Hampton, Virginia, USA.
http://www.stcnet.com/adpub/139.html

3. THIRD TRIESTE CONFERENCE ON CHEMICAL EVOLUTION.
Structure and Model of the First Cell. Trieste, Italy, 29 August-2 September, 1994. Director Cyril Ponnamperuma, Organizer Julian Chela-Flores.
Proceedings: Kluwer Academic Publishers, 1995: Dordrecht, The Netherlands.
http://www.wkap.nl/prod/b/0-7923-3562-7

4. FOURTH TRIESTE CONFERENCE ON CHEMICAL EVOLUTION.
Physics of the Origin and Evolution of Life. A Cyril Ponnamperuma Memorial. Trieste, Italy, 4-8 September, 1995. Co-Directors: J. Chela-Flores and François Raulin.
Proceedings: Kluwer Academic Publishers, 1996: Dordrecht, The Netherlands.
http://www.wkap.nl/prod/b/0-7923-4111-2

5. FIFTH TRIESTE CONFERENCE ON CHEMICAL EVOLUTION.
Exobiology: Energy, Matter and Information in the Origin and Evolution of Life in the Universe.
Trieste, Italy, 22-26 September, 1997. Co-Directors: J. Chela-Flores and François Raulin.
Proceedings: Kluwer Academic Publishers, 1998: Dordrecht, The Netherlands.
http://www.wkap.nl/prod/b/0-7923-5172-X

6. SIXTH TRIESTE CONFERENCE ON CHEMICAL EVOLUTION.
The First Steps of Life in the Universe.
Trieste, Italy, 18-22 September, 2000. Co-Directors: J. Chela-Flores, Tobias Owen and François Raulin.
Proceedings: Kluwer Academic Publishers, 2001: Dordrecht, The Netherlands.
http://www.wkap.nl/book.htm/1-4020-0077-4
Web site of the conference: http://www.ictp.trieste.it/~chelaf/trieste2000.html

7. IBERO-AMERICAN SCHOOL OF ASTROBIOLOGY
Astrobiology: Origins from the Big Bang to Civilisation.
The Abdus Salam ICTP in collaboration with the Instituto de Estudios Avanzados, Caracas, Venezuela.
Caracas, Venezuela, 29 November-8 December, 1999. Co-directors: J. Chela-Flores, Guillermo Lemarchand and Juan Oro.
Proceedings: Kluwer Academic Publishers: Dordrecht, The Netherlands.
Web site of the school: http://www.ictp.trieste.it/~chelaf/IASA/

8. SEVENTH TRIESTE CONFERENCE ON CHEMICAL EVOLUTION.
Life in the universe: From the Miller experiment to the search for life on other worlds.
Trieste, Italy, 15-19 September, 2003. Co-Directors: J. Chela-Flores, T. Owen and F. Raulin.
Web site of the conference: http://www.ictp.trieste.it/~chelaf/trieste2003.html

(g) Supporting events on astrobiology

1. FRONTIERS IN THE PHYSICS OF THE ORIGIN OF LIFE. June 27-29, 1994, La Jolla, California**,** Conference Co-Chair: G. Joyce and V. Stefan**.**
International Steering Committee, **Member of the Advisory Board.**

2. INSTRUMENTS, METHODS AND MISSIONS FOR INVESTIGATION OF EXTRA-TERRESTRIAL MICROORGANISMS *(SD 98 SYMPOSIUM)*. 19-24 July, 1998. San Diego Convention Centre, California. The International Society for Optical Engineering, Bellingham.
Conference Chaiperson: Richard B. Hoover. **Member of the Program Committee.**

3. ORIGIN OF INTELLIGENT LIFE IN THE UNIVERSE: EVOLUTION, DISTRIBUTION AND ORIGINALITY *(*International Symposium) Villa Monastero, Varenna, Italy. 28 September-1 October, 1998. Conference Co-Chairmen: Roberto Colombo, Giulio Giorello and Elio Sindone. **Member of the Scientific and Organizing Committees.**

4. INSTRUMENTS, METHODS AND MISSIONS FOR ASTROBIOLOGY II (Symposium on Astrobiology*),* 18-23 July, 1999. Denver, Colorado. The International Society for Optical Engineering, Bellingham. Conference Chair: R. B. Hoover. **Member of the Program Committee.**

5. NATO ASI SCHOOL OF ASTROBIOLOGY. Crete, Greece, 4-15 October, 1999.
Member of the Organizing Committee.

6. FRONTIERS OF LIFE (Rencontres de Blois*).* Chateau de Blois, France. June, 2000.
Member of the Organizing Committee,

7. INSTRUMENTS, METHODS AND MISSIONS FOR ASTROBIOLOGY III (SD 2000 Astrobiology Symposium). 1-2 August, 2000 San Diego Convention Centre, San Diego, California. The International Society for Optical Engineering, Bellingham. Conference Chaiperson: Richard B. Hoover.
Member of the Program Committee.

8. INSTRUMENTS, METHODS AND MISSIONS FOR ASTROBIOLOGY IV (SD 2000 Astrobiology Symposium). 29 July - 3 August, 2001 San Diego Convention Centre, San Diego, California. The International Society for Optical Engineering, Bellingham. Conference Chaiperson: Richard B. Hoover.
Member of the Program Committee.

8. ISSOL GENERAL CONFERENCE. Oaxaca, Mexico, July 2002.
Member of the International and Regional Committees.

9. INSTRUMENTS, METHODS AND MISSIONS FOR ASTROBIOLOGY V (SD 2002 Astrobiology Symposium). 22-23 August, 2002. Hilton Waikoloa Village Hotel, Hawaii. The International Society for Optical Engineering, Bellingham. Conference Chaiperson: R. B. Hoover.
Member of the Program Committee.

10. INSTRUMENTS, METHODS AND MISSIONS FOR ASTROBIOLOGY VI (SD 2002 Astrobiology Symposium). 3-8 August, 2003. San Diego Convention Centre, San Diego, California. The International Society for Optical Engineering, Bellingham. Conference Chaiperson: R. B. Hoover.
Member of the Program Committee.

11. XVIIIÈMES RENCONTRES DE BLOIS, PLANETARY SCIENCE: CHALLENGES AND DISCOVERIES.
Château Royal de Blois, 41000 BLOIS, France *21st - 26th May 2006*.
Conference Chairs: L. Celnikier (Observatoire de Paris) and Jean Tran Than Van (Orsay University).
Member of the International Advisory Committee.

12. ASTROBIOLOGY AND PLANETARY MISSIONS II: 2006 SPIE OPTICS AND PHOTONICS SYMPOSIUM
San Diego, California U.S.A. -August 14-16, 2006
Conference Chairs: Richard B. Hoover, NASA/NSSTC/MSFC; Gilbert V. Levin, Spherix Inc., and Alexei Yu. Rozanov, Paleontological Institute, RAS (Moscow)
Member of the Program Committee.

13. INSTRUMENTS METHODS AND MISSIONS FOR ASTROBIOLOGY X: 2007 SPIE OPTICS AND PHOTONICS SYMPOSIUM. San Diego, California U.S.A - August 26-30, 2007. Conference Chairs: Richard B. Hoover, NASA/MSFC/NSSTC; Gilbert V. Levin, Spherix Inc., and Alexei Yu. Rozanov, Paleontological Institute, RAS (Moscow).
Member of the Program Committee.

14. INTERNATIONAL WORKSHOP ON CHEMICAL EVOLUTION AND ORIGIN OF LIFE.
Indian Institute of Technology, Roorkee. March14-16, 2008. Organizer Prof. Kamaluddin.
Member of the International Advisory Committee.

15. INSTRUMENTS, METHODS, AND MISSIONS FOR ASTROBIOLOGY XI
Part of the SPIE International Symposium on Optical Engineering + Applications. 10 - 14 August 2008. San Diego Convention Center • San Diego, CA USA. Conference Chairs: Richard B. Hoover, NASA Marshall Space Flight Ctr.; G. V. Levin, USA, A. Y. Rozanov, Russia, P. C. W. Davies, USA.
Member of the Program Committee.

16. ISSOL GENERAL CONFERENCE (ISSOL, The International Astrobiology Society. http://www.issol.org. Florence, Italy, July, 2008.
Member of the Organizing Committee.

17. SECOND IBEROAMERICAN SCHOOL OF ASTROBIOLOGY (Del Big Bang a las Civilizaciones). Montevideo, September 7-11, 2009.
Member of the Scientific Organizing Committee.

18. SECOND INTERNATIONAL WORKSHOP ON CHEMICAL EVOLUTION AND ORIGIN OF LIFE. Indian Institute of Technology, Roorkee. March 5-7, 2010.
Organizer: Professor Kamaluddin.
Member of the International Advisory Committee.

19. III WORKSHOP DELLA SOCIETÀ ITALIANA DI ASTROBIOLOGIA
Castello di Duino, Trieste, May 26-28, 2010
Member of the Scientific Organizing Committee.

20. INSTRUMENTS, METHODS, AND MISSIONS FOR ASTROBIOLOGY XV
12-16 August 2012 • San Diego Convention Center • San Diego, Californis, United States. Conference Chairs: Richard B. Hoover, NASA Marshall Space Flight Center USA; Gilbert V. Levin, Arizona State University USA; Alexei Y. Rozanov, Paleontological Institute (Russian Federation) and Paul C. W. Davies, Arizona State University USA.
Member of the Scientific Organizing Committee.

21. THIRD INTERNATIONAL WORKSHOP ON "CHEMICAL EVOLUTION AND ORIGIN OF LIFE. Indian Institute of Technology, Roorkee. March 21-23, 2013. Organizer: Professor Kamaluddin.
Member of the International Advisory Committee.

22. BIOGEOSCIENCES-2013
A conference to bring together planetary scientists, astrobiologists, evolutionary biologists and environmental scientists. Cuba, November 4th--8th, 2013.
Member of the International Advisory Board.

23. SAILING THROUGH THE WONDERS OF ASTROBIOLOGY

XVII International Conference on Science, Arts and Culture
September 25th-29th, 2017. Veli Losinj, Croatia,
Member of the Scientific Advisory Committe.

24. BG-17: II INTERNATIONAL CONFERENCE ON BIOGEOSCIENCES
A conference to bring together Matematical Modeling of Natural Environments
Planetary Habitability, Environmental Sciences and Philosophy and Teaching of Natural and Exact Sciences. Cuba, October 23-27, 2017.
Member of the Program Committee.

25. BG-19: III INTERNATIONAL CONFERENCE ON BIOGEOSCIENCES.
A conference to bring together environmental engineering, mathematical modeling of natural environments, planetary science, and environmental sciences. Cuba, June 23-30, 2019.
Member of the Program Committee.

26. BG-21: IV INTERNATIONAL CONFERENCE ON BIOGEOSCIENCES: Modelling natural environments:From Earth's ecosystems to exoplanets. Villa Clara Keys Resorts, Santa María-Ensenacho–Las Brujas, Cuba, November 15-19, 2021.
Member of the Scientific Committee.