

**Prof. Fayçal DJEFFAL**  
**Micro/Nanoelectronics and solid-state devices**

**I. Address:**

*Department of Electronics  
Faculty of Technology  
University of Batna-2  
Batna, 05000, ALGERIA*  
E-mails:  
*faycal.djeffal@univ-batna2.dz  
faycaldzdz@hotmail.com  
Tel. (Mobile):00213560859038  
00213773796503*



**II. Education and Academic Degrees**

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| <b>1993-1998</b> | <ul style="list-style-type: none"><li>• Engineer degrees in Electronics (with first class honor), University of Batna, Batna, Algeria.</li></ul>   |
| <b>1998-2001</b> | <ul style="list-style-type: none"><li>• M.Sc. degrees in Microelectronics (with first class honor), University of Batna, Batna, Algeria.</li></ul> |
| <b>2002-2006</b> | <ul style="list-style-type: none"><li>• Ph.D degrees in Microelectronics, University of Batna, Batna, Algeria.</li></ul>                           |
| <b>2006-2007</b> | <ul style="list-style-type: none"><li>• Habilitation (HDR) degrees in Micro and Nanoelectronics, University of Batna, Batna, Algeria.</li></ul>    |

**III. Professional Background**

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| <b>2000-2002</b>    | <ul style="list-style-type: none"><li>• Ass. Lecturer (Partial Time).</li></ul>                          |
| <b>2002-2006</b>    | <ul style="list-style-type: none"><li>• Ass. Professor B, University of Batna, Batna, Algeria.</li></ul> |
| <b>2006-2007</b>    | <ul style="list-style-type: none"><li>• Ass. Professor A, University of Batna, Batna, Algeria.</li></ul> |
| <b>2007-2012</b>    | <ul style="list-style-type: none"><li>• Assoc. Professor, University of Batna, Batna, Algeria.</li></ul> |
| <b>2012-present</b> | <ul style="list-style-type: none"><li>• Professor, University of Batna-2, Batna, Algeria.</li></ul>      |

**IV. Awards and memberships:**

1. National –ANDRU- Award for best scientific publications (2007), Algeria.
2. Member of European Materials Research Society (E-MRS),2007, France.
3. National –CDER- Award for best scientific publications (2008), Algeria.
4. Microsoft-TWAS-AAS Award (2010), Italy.
5. MADICA'2010, Best paper Award, October 20-22, Tabarka (2010), Tunisia.
6. Shoman Award for Arab Researchers - Engineering Sciences- (2011), Jordan.
7. Marquis's who's who in Sciences and Engineering 2011-2012, USA.
8. Senior Member of IEEE (IEEE-SM), 2013, USA.
9. Senior member of IACSIT, 2013, Singapore.
10. TWAS-Young Fellow (World Academy of Sciences), 2013, Italy.
11. World Congress of Engineering (WCE'2013), Certificate of Merit for Best paper, London (2013), UK.
12. Member of Arab-German Academy of Sciences and Humanities (AGYA), 2013, Berlin, Germany.
13. Fellow of the African Academy of Sciences (AAS), 2014, Nairobi, Kenya.
14. World Congress of Engineering (WCE'2014), Certificate of Merit for Best paper, London (2014), UK.
15. World Congress of Engineering (WCE'2015), Best paper Award, London (2015), UK.
16. National -ANASR- Award for best scientific paper in Physical sciences and Mathematics (2017), Algeria.
17. Young African researchers award-2019, Cairo, Egypt.

18. Member of National Commission of Universities (CUN), 2021.
19. Fellow of The World Academy of Sciences (TWAS), 2023.

#### **V. Main Field of Interest:**

- Micro/nanoelectronics; Optoelectronics; Renewable Energy; photovoltaic; Soft-Computing/artificial intelligence.

##### **1. Artificial Intelligence and Soft-Computing**

- Artificial Neural Networks (MLP, RBF, ...)
- Evolutionary Techniques (Genetic Algorithms GAs, Particle Swarm Optimization PSO, multi-objective process,...).
- Expert Systems
- Fuzzy Logic.
- Neural Space Mapping approaches
- Multi-Objectives Optimization techniques.

##### **2. Micro/nanoelectronics and Optoelectronics**

- Soft-computing-based approaches to study microelectronic devices for energy and environmental sensing applications (Power devices, sensors, solar cells...).
- Metamaterial for optoelectronic and photovoltaic applications (sensors, solar cells, ..).
- Environmental sensing.
- Graphene-based sensors for environmental sensing and energy applications.
- Fabrication and characterization of microelectronic devices (RF sputtering, PVD, XRD, UV-Vis, ...).

#### **VI. Engineering, Master and doctoral theses supervision:**

1. Supervision of 28 Masters and 12 PhD theses.
2. Member in several M.sc. and Ph.D. theses supervisory committees.

#### **VII. Research Projects:**

- Head of project “Contribution to the development of nanoelectronics circuit Simulator using Soft-Computing-based techniques” Algerian project (CNEPRU), 2009-2011.
- Member of project “Elaboration of power converters for electrical system applications” Algerian project (CNEPRU), 2006-2009.
- Member of Project “ Nouvelles Approches à l’étude des systèmes nanoélectroniques: Application à la conception des dispositifs intégrés nanométriques”, Algerian project (PNR), 2011-2013.
- Head of project “ Etude, Modélisation et élaboration des cellules solaires hétérostructures à base SiGe ” Algerian project (PNR-NOUR21), 2015-2017.
- Head of project “ Study, Optimization and elaboration of low cost optoelectronic and photovoltaic devices ” Algerian project (PRFU), 2019-2022.

#### **VIII. Reviewer and Editorial Activities**

- Associate Editor for Indonesian Journal of Electrical Engineering (IJEE) <http://telkomnika.ee.uad.ac.id>. (Since 2010).

I have reviewed several articles in following International journals and conferences, such as:

- Journal of Soft-Computing: (Publisher: Elsevier),(Since 2010).
- Applied mathematical modelling (Publisher: Elsevier),(Since 2009).
- Journal of IET circuits, devices and systems (Publisher: IET),(Since 2008)
- Journal of Applied Physics: Condensed Matter (Publisher: IOP),(Since 2007).
- Journal of Semiconductor Sciences and Technology (Publisher: IOP), (Since 2007).
- Journal of Nanotechnology (Publisher: IOP),(Since 2007).
- Journal of Physics D: Applied Physics (Publisher: IOP),(Since 2008).
- Journal of Materials Sciences and Eng-B (Publisher: Elsevier),(Since 2007).
- Journal of microelectronics (Publisher: Elsevier),(Since 2009).
- International Journal of Electronics ((Publisher: Taylor and Francis),(Since 2008).
- IEEE Trans Electron Devices (Publisher: IEEE),(Since 2009).
- Journal Measurement Science and Technology (Publisher: IOP),(Since 2011).

- Journal of Superlattices and Microstructures (Publisher: Elsevier),(Since 2010).
- Journal of Journal of Alloys and Compounds (Publisher: Elsevier), (Since 2020).
- IETE Technical Review; (Since 2011).
- IEEE sensors; (Since 2018).
- Journal of computational electronics (Publisher: Springer); (Since 2018)
- 2013 IEEE Congress on Evolutionary Computation, June 20-23, 2013, Cancun, Mexico.
- 2014 IEEE Congress on Evolutionary Computation, July09-11, 2014, China.
- 2015 IEEE Congress on Evolutionary Computation, May08-10, 2015, Japan.
- IEEE- STA'14-21, Tunisia, 2014-2021.
- IEEE- ICSC'15, April 28-30, Sousse, Tunisia, 2015.
- WCE-2017, July 03-05, London, UK, 2017.

**Language Skills:** Good spoken and written both French and English as foreign languages.

### X. Publications list:

Citations Index, Google scholar, (h-index): 31.

Citations Index, Scopus, (h-index): 29.

#### 1. Published books:

- [B.1] **F. Djeffal** and N. Lakhdar, Multigate (III-V) FET-based devices for high performance applications, **English Edition**, LAP LAMBERT Academic Publishing - ISBN-13: 978-3-659-33333-0, 2012, Germany. 132 pages (www.morebooks.de).
- [B.2] **F. Djeffal** and T. Bendib, Evolutionary and neural techniques: Application to Microelectronics circuits, **French Edition**, ISBN: 978-9947-0-2486-7, 2008, Batna, Algeria. 138 pages.
- [B.3] **F. Djeffal** and M.A. Abdi, Courses and Exercises in Electronics, **Arabic Edition**, ISBN: 978-9961-9654-8-1, 2008, Batna, Algeria. 110 pages.
- [B.4] **F. Djeffal**, Predictive modeling of deep submicron MOSFET: Application to nanoscale devices design, **French Edition**, Publishing European University, ISBN: 978-613-1-52913-9, 2010, Sarrebruck, Germany. 164 pages (www.amazon.com).
- [B.5] **F. Djeffal** and T. Bendib, Nanoscale MOSFETs, **French Edition**, Publishing European University, ISBN: 978-6131552021, 2010, Sarrebruck, Germany. 88 pages (www.amazon.com).
- [B.6] **F. Djeffal** and N. Lakhdar, Modeling of Electron mobility in Semiconductor devices, **French Edition**, Publishing European university, ISBN: 978- 6131551390, 2010, Sarrebruck, Germany. 100 pages (www.amazon.com).
- [B.7] M. Meguellati, **F. Djeffal**, Multigate FET-based sensors for Engineering applications, **English Edition**, LAP LAMBERT Academic Publishing - ISBN-13: 978-3-8465-4597-3, 2012, Germany. 101 pages (www.morebooks.de).

#### 3. Published chapters-book

- [CB.1] N. Abdelmalek, **F. Djeffal**, T. Bentrchia, " Investigation of Hot Carrier–induced Degradation in Nanoscale Junctionless MOSFETs : A Reliability-based Analysis", Chapter.4 in the book: Nanotechnology in Electronics: Materials, Properties, Devices, ISBN: 9783527824229, publisher Wiley-VCH GmbH, 2023.
- [CB.2] T. Bentrchia, **F. Djeffal** and E. Chebaki, "Multi-objective Design of Nanoscale Double Gate MOSFET Devices Using Surrogate Modeling and Global Optimization", Intelligent Nanomaterials, 2nd Edition, ISBN: 978-1-119-24248-2, Edited: Ashutosh Tiwari, publisher: Wiley, pp. 395-427, 2016.
- [CB.3] **F. Djeffal**, A. Benhaya, K. Tamersit, and M. Meguellati, "New dielectric modulated graphene (DMG) FET-based sensor for High-performance biomedical sensing applications," IAENG Transactions on Engineering Sciences: DOI: 10.1142/9789814667364\_0030, ISBN: 978-981-4667-35-7, World Scientific Publishing, Edited by: Sio-Iong Ao, Alan Hoi-Shou Chan, Hideki Katagiri, Li Xu, Hong Kong, pp. 401-414, 2015.
- [CB.4] T. Bendib, L. Pancheri, **F. Djeffal** and G-F. Dalla Betta, "Modeling and optimization of avalanche photodiode electrical parameters using multiobjective genetic algorithm," IAENG Transactions on Engineering Sciences: DOI: 10.1142/9789814667364\_0031, ISBN: 978-981-4667-35-7, World Scientific Publishing, Edited by: Sio-Iong Ao, Alan Hoi-Shou Chan, Hideki Katagiri, Li Xu, Hong Kong, pp. 415-429, 2015.

- [CB.5] **F.Djeffal** and T. Bendib, Artificial-Neural-Networks-Based Approaches to study the Nanoscale CMOS Devices, Book title: Artificial Neural networks, Editor: Seoyun J. Kwon, Publisher: Nova Science Publishers, ISBN: 978-1-61761-553-5, 2010, pp. 109-122, New York, USA.
- [CB.6] T. Bentrchia and **F.Djeffal**, Compact Modeling of Multi-Gate MOSFET including Hot-Carrier Effects, Book title: CMOS Technology, Editor: Min-jun Kwon, Publisher: Nova Science Publishers, ISBN: 978-1-61761-325-8, 2010, pp.135-158, New York, USA.
- [CB.7] F. Djeffal and M. Meguellati, "multigate RADFET dosimeter For Radioactive Environment Monitoring Applications", series title: lecture notes in electrical engineering, Editors names: Gi-Chul Yang, SIO-IONG AO. Len Gelman, Title of Book: IAENG Transactions on Engineering Technologies, GPU/PS: 3/9059, SPIN: GT-C-CTP-09/2012, Vol. 229, 2013, pp 301-313, Springer, Netherlands.
- [CB.8] T. Bendib and **F. Djeffal**, "Multi-objective-based approach to optimize the Analog Electrical behavior of GSDG MOSFET: application to nanoscale circuit design", series title: lecture notes in electrical engineering, Editors names: Gi-Chul Yang, SIO-IONG AO. Len Gelman, Title of Book: IAENG Transactions on Engineering Technologies, GPU/PS: 3/9059, SPIN: GT-C-CTP-09/2012, Vol. 229, 2013, pp 315-325, Springer, Netherlands.
- [CB.9] T. Bentrchia and **F. Djeffal**, "An ANFIS based approach for prediction of threshold voltage degradation in nanoscale DG MOSFET devices" Editors names: Gi-Chul Yang, Sio-Iong Ao, Len Gelman, Book Title: IAENG Transactions on Engineering Technologies, DOI: 10.1007/978-94-017-8832-8\_25, ISBN: 978-94-017-8831-1, pp 339-353, 2014, Springer, Netherlands.

### 3. Published papers in Referred Journals

- [J.1] H. Ferhati, F. Djeffal, F. AbdelMalek, "Towards improved efficiency of SnS solar cells using back grooves and strained-SnO<sub>2</sub> buffer layer: FDTD and DFT calculations" *Journal of Physics and Chemistry of Solids*, Vol. 178, pp. 111353, 2023. (IF= 4.38).
- [J.2] A. Maoucha, H. Ferhati, F. Djeffal " Highly efficient Cd-Free ZnMgO/CIGS solar cells via effective band-gap tuning strategy" *Journal of Computational Electronics*, pp.1-10, 2023. (IF= 1.98).
- [J.3] H. Ferhati, F. Djeffal, L.B. Drissi, Performance analysis of a new Mid-Infrared phototransistor based on combined graded band gap GeSn sensitive-film and IGZO TFT platform, *Micro and Nanostructures* 173, 207467, 2023 (IF= 3.22).
- [J.4] F Djeffal, H Ferhati, A Benyahia, Z Dibi, Performance analysis of SnS photodetector using strained SnO<sub>2</sub> stacked layer: Numerical simulation and DFT calculations, *Microelectronic Engineering*, pp. 111961, 2023 (Indexed by: Scopus/ISI Thomson/IF= 2.66).
- [J.5] B Zerroumda, F Djeffal, S Benagoune, H Ferhati, Performance assessment of a novel 4H-SiC junctionless planar power MOSFET towards improving electrical properties, *Micro and Nanostructures* 169, 207346, 2022 (Indexed by: Scopus/ISI Thomson/IF= 3.22).
- [J.6] Ramadan, F. Z., Djeffal, F., Drissi, L. B., Saidi, S., & Ferhati, H. (2022). Highly efficient ACdTS kesterite solar cell based on a new photovoltaic material. *Journal of Physics and Chemistry of Solids*, 161, 110458. (Indexed by: Scopus/ISI Thomson/IF= 4.38).
- [J.7] Farah, S. E., Dibi, Z., Ferhati, H., & Djeffal, F. (2022). DFT-FDTD modeling of a new broadband mid-infrared IGZO thin-film phototransistor based on black phosphorus capping layer incorporating intermediate metallic film. *Journal of Physics and Chemistry of Solids*, 162, 110528. (Indexed by: Scopus/ISI Thomson/IF= 4.38).
- [J.8] Ferhati, H., Djeffal, F., & Drissi, L. B. (2022). Metaheuristic-based decision maker framework for the development of multispectral IGZO thin-film phototransistors. *Journal of Science: Advanced Materials and Devices*, 7(1), 100414. (Indexed by: Scopus/ISI Thomson/IF= 7.32).
- [J.9] Benyekken, C., Benhaya, A., Djeffal, F., & Chahdi, M. (2022). Impact of Cathodic Potential on the Growth Mechanisms and Morphology of Ni-P Alloys Using Electrodeposition Technique. *Transactions on Electrical and Electronic Materials*, 23(1), 52-63.
- [J.10] Farah, S. E., Ferhati, H., Dibi, Z., & Djeffal, F. (2022). Performance analysis of broadband Mid-IR graphene-phototransistor using strained black phosphorus sensing gate: DFT-NEGF investigation. *Micro and Nanostructures*, 163, 107187. (Indexed by: Scopus/ISI Thomson/IF= 3.22).
- [J.11] Ferhati, H., Djeffal, F., Bendjerad, A., Foughali, L., Benhaya, A., & Saidi, A. (2022). Highly-detective tunable band-selective photodetector based on RF sputtered amorphous SiC thin-

- film: Effect of sputtering power. *Journal of Alloys and Compounds*, 907, 164464. (Indexed by: Scopus/ISI Thomson/IF= 6.37).
- [J.12] Kacha, K., Djeflal, F., Ferhati, H., Foughali, L., Bendjerad, A., Benhaya, A., & Saidi, A. (2022). Efficiency improvement of CIGS solar cells using RF sputtered TCO/Ag/TCO thin-film as prospective buffer layer. *Ceramics International*, 48(14), 20194-20200. (Indexed by: Scopus/ISI Thomson/IF= 5.53).
- [J.13] Kacha, K., Djeflal, F., Ferhati, H., Bendjerad, A., Benhaya, A., & Saidi, A. (2022). Broadband spectral photodetector based on all-amorphous ZnO/Si heterostructure incorporating Ag intermediate thin-films. *Optical Materials*, 130, 112578. (Indexed by: Scopus/ISI Thomson/IF= 3.75).
- [J.14] A Betka, B Bentabet, A Bouzid, F Djeflal, H Ferhati, A Azbouche, An empirical model for the Backscattering coefficient of 1-30 keV electrons from thin film targets, *REVISTA MEXICANA DE FISICA* 68 (4), 2022. (Indexed by: Scopus/ISI Thomson/IF= 1.52).
- [J.15] Djeflal, F., Boubiche, N., Ferhati, H., Faerber, J., Le Normand, F., Javahiraly, N., & Fix, T. (2021). Highly efficient and low-cost multispectral photodetector based on RF sputtered a-Si/Ti multilayer structure for Si-photonics applications. *Journal of Alloys and Compounds*, 876, 160176. (Indexed by: Scopus/ISI Thomson/IF= 6.37).
- [J.16] Ferhati, H., Djeflal, F., Boubiche, N., Benhaya, A., Faerber, J., Le Normand, F., ... & Fix, T. (2021). Absorption enhancement in amorphous Si by introducing RF sputtered Ti intermediate layers for photovoltaic applications. *Materials Science and Engineering: B*, 269, 115152. (Indexed by: Scopus/ISI Thomson/IF= 4.05).
- [J.17] Ferhati, H., Djeflal, F., Bendjerad, A., Saidi, A., & Benhaya, A. (2021). Post-annealing effects on RF sputtered all-amorphous ZnO/SiC heterostructure for solar-blind highly-detective and ultralow dark-noise UV photodetector. *Journal of Non-Crystalline Solids*, 574, 121168. (Indexed by: Scopus/ISI Thomson/IF= 4.46).
- [J.18] F.Z. Ramadan, F.Djeflal, L.B. Drissi, S.Saidi, H.Ferhati, Highly efficient ACdTS kesterite solar cell based on a new photovoltaic material, *Journal of Physics and Chemistry of Solids*, 2021, <https://doi.org/10.1016/j.jpics.2021.110458>, (Indexed by: Scopus/ISI Thomson/IF= 4.38).
- [J.19] El-Bakkali, A., Sadki, S., Drissi, L. B., & Djeflal, F. (2021). Layers engineering optoelectronic properties of 2D hexagonal GeS materials. *Physica E: Low-dimensional Systems and Nanostructures*, 133, 114791. (Indexed by: Scopus/ISI Thomson/IF= 3.34).
- [J.20] Kadri, A., Ferhati, H., & Djeflal, F. (2021). Giant responsivity of a new optically controlled graphene UV-phototransistor using graded band-gap ZnMgO gate. *Sensors and Actuators A: Physical*, 325, 112701. (Indexed by: Scopus/ISI Thomson/IF= 3.40).
- [J.21] Ferhati, H., Djeflal, F., & Drissi, L. B. (2021). Enhanced infrared photoresponse of a new InGaZnO TFT based on Ge capping layer and high-k dielectric material. *Superlattices and Microstructures*, 106967. (Indexed by: Scopus/ISI Thomson/IF= 2.64).
- [J.22] Ferhati, H., Bendjerad, A., Djeflal, F., Benhaya, A., & Saidi, A. (2021). Multispectral photodetection using low-cost sputtered NiO/Ag/ITO heterostructure: From design concept to elaboration. *Ceramics International*, 47(11), 15703-15709. (Indexed by: Scopus/ISI Thomson/IF= 4.52).
- [J.23] Benyahia, K., Djeflal, F., Ferhati, H., Benhaya, A., Bendjerad, A., Djaballah, Y., & Martin, N. (2021). Microstructured ZnO-ZnS composite for earth-abundant photovoltaics: Elaboration, surface analysis and enhanced optical performances. *Solar Energy*, 218, 312-319. (Indexed by: Scopus/ISI Thomson/IF= 5.74).
- [J.24] Ferhati, H., Djeflal, F., Bendjerad, A., Benhaya, A., & Saidi, A. (2021). Perovskite/InGaAs tandem cell exceeding 29% efficiency via optimizing spectral splitter based on RF sputtered ITO/Ag/ITO ultra-thin structure. *Physica E: Low-dimensional Systems and Nanostructures*, 128, 114618. (Indexed by: Scopus/ISI Thomson/IF= 3.34).
- [J.25] Ferhati, H., & Djeflal, F. (2021). Giant responsivity of a new InGaZnO ultraviolet thin-film phototransistor based on combined dual gate engineering and surface decorated Ag nanoparticles aspects. *Sensors and Actuators A: Physical*, 318, 112523. (Indexed by: Scopus/ISI Thomson/IF= 3.40).
- [J.26] Kebabi, A., Bentabet, A., Djeflal, F., Ferhati, H., Benmekideche, N., Benmakhlouf, A., & Chala, A. (2021). DFT study of X-doped (X= Cu, Ag, Au) boron nitride nanotubes for spintronic and optoelectronic applications. *Optik*, 225, 165863. (Indexed by: Scopus/ISI Thomson/IF= 2.44).
- [J.27] Ferhati, H., Djeflal, F., Saidi, A., Benhaya, A., & Bendjerad, A. (2021). Effects of annealing process on the structural and photodetection properties of new thin-film solar-blind UV sensor



- based on Si-photonics technology. *Materials Science in Semiconductor Processing*, 121, 105331. (Indexed by: Scopus/ISI Thomson/IF= 3.9).
- [J.28] Ferhati, H., Djeflal, F., & Martin, N. (2020). Highly improved responsivity of self-powered UV–Visible photodetector based on TiO<sub>2</sub>/Ag/TiO<sub>2</sub> multilayer deposited by GLAD technique: Effects of oriented columns and nano-sculptured surface. *Applied Surface Science*, 529, 147069. (Indexed by: Scopus/ISI Thomson/IF= 6.75).
- [J.29] Benyahia, K., Djeflal, F., Ferhati, H., Bendjerad, A., Benhaya, A., & Saidi, A. (2020). Self-powered photodetector with improved and broadband multispectral photoresponsivity based on ZnO-ZnS composite. *Journal of Alloys and Compounds*, 158242. (Indexed by: Scopus/ISI Thomson/IF= 5.31).
- [J.30] Ferhati, H., Djeflal, F., & Drissi, B. L. (2020). Performance improvement of Perovskite/CZTS tandem solar cell using low-cost ZnS/Ag/ITO multilayer spectrum splitter. *Superlattices and Microstructures*, 148, 106727. (Indexed by: Scopus/ISI Thomson/IF= 2.64).
- [J.31] Ferhati, H., Djeflal, F., & Drissi, L. B. (2020). Performance assessment of a new infrared phototransistor based on JL-TFET structure: numerical study and circuit level investigation. *Optik*, 165471. (Indexed by: Scopus/ISI Thomson/IF= 2.44).
- [J.32] Ferhati, H., Djeflal, F., Bendjerad, A., Saidi, A., & Benhaya, A. (2020). Novel solar-blind ultraviolet photodetector based on inserting sputtered ITO ultrathin film for integrated silicon photonics platform. *Superlattices and Microstructures*, 106564. (Indexed by: Scopus/ISI Thomson/IF= 2.64).
- [J.33] H Ferhati, F Djeflal, BL Drissi, (2020). Performance improvement of Perovskite/CZTS tandem solar cell using low-cost ZnS/Ag/ITO multilayer spectrum splitter, *Superlattices and Microstructures*, 106727. (Indexed by: Scopus/ISI Thomson/IF= 2.64).
- [J.34] Saaoud, M., Sadki, K., Drissi, L. B., & Djeflal, F. (2020). Mechanical response of η-layered borophene: impact of strain, temperature, vacancies and intercalation. *The European Physical Journal Applied Physics*, 90(3), 30401. (Indexed by: Scopus/ISI Thomson/IF= 0.99).
- [J.35] H Ferhati, F Djeflal, N. Boubiche, F. Le-Normand, An efficient ITO-free transparent electrode based on diamond-like carbon with an engineered intermediate metallic thin-film, *Solar Energy*, Vol. 196, Pages 327-335, 2020. (Indexed by: Scopus/ISI Thomson/IF= 5.74).
- [J.36] H Ferhati, F Djeflal, A. Benhaya, N. Martin, Highly sensitive, ultra-low dark current, self-powered solar-blind ultraviolet photodetector based on ZnO thin-film with an engineered rear metallic layer, *Materials Science in Semiconductor Processing*, vol. 110, 104957, 2020. (Indexed by: Scopus/ISI Thomson/IF= 3.92).
- [J.37] L. B. Drissi, F. Z. Ramadan, H. Ferhati, F. Djeflal and N. B.-J. Kanga, New highly efficient 2D SiC UV-absorbing material with plasmonic light trapping, *Journal of Physics Condensed Matter* vol. 32, pp. 025701, 2020. (Indexed by: Scopus/ISI Thomson/IF= 2.7).
- [J.38] H. Ferhati, F. Djeflal and L. B. Drissi, A new approach to the modeling and simulation of multi-junction solar cells, *Optik* vol. 200, pp.163452, 2020. (Indexed by: Scopus/ISI Thomson/IF= 2.44).
- [J.39] H. Ferhati, F. Djeflal, Performance assessment of TCO/Metal/TCO multilayer transparent electrodes: from design concept to optimization, *Journal of Computational Electronics*, pp.1-8, 2020. (Indexed by: Scopus/ISI Thomson/IF= 1.80).
- [J.40] H. Ferhati, F. Djeflal, Plasmonic effect of metal nanoparticles on enhancing performance of transparent electrodes: A computational Investigation, *Journal of Computational Electronics*, 19 (1), 333-341, 2020. (Indexed by: Scopus/ISI Thomson/IF= 1.80).
- [J.41] H. Ferhati and F. Djeflal, Performance assessment of Gr/Si/Gr UV-photodetector: Design and optimization of graphene interdigitated electrodes, *Superlattices and Microstructures* 132, 106166, 2019. (Indexed by: Scopus/ISI Thomson/IF= 2.64).
- [J.42] H. Ferhati and F. Djeflal, Enhanced performance of ultraviolet photodetector based on sputtered ZnO/Au/ZnO multilayer structure, *Superlattices and Microstructures* 134, 106225, 2019. (Indexed by: Scopus/ISI Thomson/IF= 2.64).
- [J.43] H Ferhati, F Djeflal, High-responsivity MSM solar-blind UV photodetector based on annealed ITO/Ag/ITO structure using RF sputtering, *IEEE Sensors Journal*, vol.18, pp. 1 –8, 2019 (Indexed by: Scopus/ISI Thomson/IF= 3.30).
- [J.44] F Djeflal, H Ferhati, A Benhaya, A Bendjerad, Effects of high temperature annealing in enhancing the optoelectronic performance of sputtered ITO/Ag/ITO transparent electrodes, *Superlattices and Microstructures* 130, 361-368, 2019. (Indexed by: Scopus/ISI Thomson/IF= 2.64).

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