

Mohamed Hussein Ahmed Researcher in Light Technology Institute, Karlsruhe Institute of Technology, Karlsruhe, Germany	Cell phone: +4915252072833 Email: mohamed.hussein@kit.edu Scopus Profile Google scholar Profile Research Gate Profile
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Education

Ph.D. in Physics	Thesis title: Design, Simulation and Characterization of Electromagnetic Energy Harvesting Devices. Synopsis: A Joint research project between, Physics Department, Ain Shams University, Egypt, the Centre for Photonics and Smart Materials, Zewail City for Science and Technology Wayne State University, USA . For four years shared time (Wayne State University, USA 50%, Zewail City 25%, Ain Shams University 25%)	2012-2016
PhD Courses	PhD Qualifying Exam Courses: Quantum Mechanics (Phy 701), Classical Mechanics (Phy 702), Statistical Mechanics (Phy P703) and Electrodynamics (Phy 704). PhD Specialized Courses: Nanoelectronics (Phy 721), Computational Electromagnetics (Phy 722) and Numerical Methods for Scientist and Engineering (Phy 723).	2011-2012
M.Sc. in Physics	Thesis title: Design, Simulation and Implementation of Radio Frequency Identification Systems. Physics Department, Faculty of Science, Ain Shams University, Cairo, Egypt.	2008 -2010
M.Sc. Courses	Advanced Quantum Mechanics (Phy 601), Advanced Electrodynamics (Phy 602), Statistical Physics (Phy 603), Computational Physics (Phy 604), Mathematical Physics (Phy 605), Telecommunication and Electronics (Phy 621), Advanced Electronic Circuits (Phy 622), Computational Systems in Electronics (Phy 623), Microwaves (Phy 624), Solid State Electronics (Phy 625).	2007-2008
B.Sc. in Electronics	Very good Cum Laude 83.1% and Ranked 1st among students of the major electronics Physics Department, Faculty of Science, Ain Shams University, Cairo, Egypt. Appointed at the University as an academic assistant in 2007 Physics Department, Faculty of Science, Ain Shams University, Cairo, Egypt.	2002-2006

Employment History and Research Experience

Researcher, Light Technology Institute, Karlsruhe Institute of Technology, Karlsruhe, Germany.	Jan. 2021 - Dec. 2022
Assistant Professor, Physics Department, Faculty of Science, Ain Shams University, Cairo, Egypt. Combining research, Supervision of 6 MSc and 1PhD students with teaching tasks (detailed in Appendix 1)	June 2016 - Jan. 2017 August 2017 – Dec.2020
Visiting Assistant Professor for Design, Simulation, and Characterization of ultrafast high-performance metal-insulator-metal (MIM) nanodiodes for infrared rectification and energy harvesting application, Department of Electrical Engineering, Faculty of Engineering, Wayne state university, Michigan, USA.	Feb.2017 -August 2017

<p>Assistant Professor for Design and Simulation of Nanostructured solar cells and nanoantenna's for optical communication applications, Centre for Photonics and Smart Materials, Zewail City for Science and Technology, Egypt. (Supervise 6 MSc and 2 PhD students)</p>	<p>June 2016 - Jan.2017 August 2017- Dec.2020</p>
<p>Research Assistant in Design and analysis of nanostructured for solar energy harvesting, Center for Photonics and Smart Materials, Zewail City of Science and Technology, Cairo, Egypt.</p>	<p>Sept. 2012 - May 2016</p>
<p>Research Assistant in Design, Simulation, Fabrication and Characterization of Microwave Antennas, Josaphat Microwave Remote Sensing Laboratory Center for Environmental Remote Sensing (CERes), Chiba University, Chiba, Japan.</p>	<p>Feb. 2012 - July 2012</p>
<p>Assistant Lecturer for undergraduate electronics, antennas, microwaves labs and courses in Physics Department, Faculty of Science, Ain Shams University, Cairo, Egypt.</p>	<p>March.2008 - May2016</p>
<p>Academic assistant for undergraduate electronics, antennas, microwaves labs and courses in, Physics Department, Faculty of Science, Ain Shams University, Cairo, Egypt.</p>	<p>March 2008- Sept. 2010</p>
<p>Graduate student in Design, Simulation and Implementation of Radio Frequency Identifications, Physics Department, Faculty of Science, Ain Shams University, Cairo, Egypt.</p> <p><i>During these employments I have been combing scientific research that was interpreted to publications (detailed in Appendix 1) and academic teaching (detailed in appendix 2)</i></p>	<p>March 2008- Sept. 2010</p>

Honors and Distinctions

<p>❖ Elected Senior Member of the Optical Society of America (OSA), USA.</p>	<p>2021</p>
<p>❖ Elected Senior Member of the Institute of Electrical and Electronic Engineers (IEEE), USA.</p>	<p>2020</p>
<p>❖ Elected by the African Academy of Science (AAS) as affiliated member among 40 young promising and active scientists in Africa.</p>	<p>2020</p>
<p>❖ Medal of Excellence from President AbdelFatah Elsis, due to outstanding research effort in solar energy harvesting.</p>	<p>2020</p>
<p>❖ State Encouragement Award for Engineering Sciences from the Egyptian Government, Egypt. Only 1 scientist awarded this prestigious award/year in Engineering Physics.</p>	<p>2019</p>
<p>❖ Elected by the Minister of Higher Education and Research in Egypt as a member of the Egyptian Young Academy of Science (EYAS) 2019/2022, Academy of Scientific Research and Technology, Egypt; within a team of 15 young promising and active scientists in Egypt in their fields.</p>	<p>2019</p>
<p>❖ Elected by the Minister of Higher Education and Research in Egypt as a member of the National Council for Communications and Information Technology 2019/2022, Academy of Scientific Research and Technology, Egypt; within a team of 15 members of the most prominent scientists in Egypt in their fields.</p>	<p>2019</p>

❖ Best PhD thesis award from Ain Shams University for my work on Design, Simulation and Characterization of Electromagnetic Energy Harvesting Devices.	2017
❖ National postdoc fellowship awarded annually for outstanding young Egyptian researchers; spent at Wayne State University, Michigan, USA.	2016
❖ Travelling and participation grant from the international center of theoretical physics (ICTP), Trieste, Italy to participate in Winter College on optics: “trends in laser development and multidisciplinary applications to science and industry” in Italy.	2013
❖ National research fellowship awarded annually for distinctive M.Sc. Egyptian scholars; spent at Chiba University, Chiba, Japan.	2012
❖ Best M.Sc. thesis award from Ain Shams University for my work on Design, Simulation and Implementation of Radio Frequency Identification Systems.	2011
❖ Travelling and participation grant from Joint Institute for Nuclear Research, Dubna, Russia to participate in “Grid Technologies” summer school in Russia.	2010
❖ Award of first class Honours graduate (Ranked 1st among electronics students in the physics Dept.) Faculty of Science, Ain Shams University, Cairo, Egypt.	2006
❖ Medal of Honor from the Egyptian Syndicate of Scientific Professions, Egypt.	2006
❖ Dean’s Honor List and Monetary Awards , Faculty of Science, Ain Shams University, Cairo, Egypt.	2003-2006

Research Interests

➤ Computational Photonics
<ul style="list-style-type: none"> • Broad knowledge of numerical modeling of photonic devices based on finite difference time domain method via numerical software package. • Working knowledge of model analysis of various electromagnetic devices using finite element method via COMSOL Multi Physics. • Hands on experience in microwaves and optical antennas design, simulation and characterization using CST. • Hands on experience in numerical methods implementation using MATHLAB, C++ and FORTRAN.
➤ Solar energy harvesting
<ul style="list-style-type: none"> • Nano-structured solar cells (Si-nanowire and plasmonic solar cells) • Rectennas
➤ Plasmonic Optics and Nanophotonics
<ul style="list-style-type: none"> • Optical nanoantennas and metallic nanostructures: control of photon absorption, emission, and localization at the nanoscale.
➤ Graphene and Phase Transition Materials in Nano-electronics and Nano-optoelectronics
<ul style="list-style-type: none"> • Graphene plasmonics and optoelectronics at THz and infrared • Electromagnetic and transport theory of graphene devices • Phase Change Materials for Photonics
➤ Electromagnetics and Electrophysics
<ul style="list-style-type: none"> • Nano-electromagnetism, light management and harvesting • Metamaterials, electromagnetic wave propagation and scattering in complex medium • RF and microwave devices and antennas

Funded Research Projects

Co-PI	Title: Knowledge and Technology Alliance: Solar Energy Funded by: Academy of Scientific Research and Technology, Egypt Amount: 20 M EGP	2018-2021
Member	Title: Highly-efficient nano-structure solar cells for energy security (shared with City University of London, UK) Funded by: Newton Institutional Links grants-British Council-2018 Amount: 2.5 M EGP	2018-2020
Member	Title: Self-Organised nanostructures for solar energy Harvesting”, (shared with Università di Genova, Italy) Funded by: STDF/ Academy of Scientific Research & Technology (ASRT) Amount: 3.2 M EGP	2018-2020

Publications Summary (Detailed in appendix 2)

Journal Papers	30
Conference Papers	38
Book Chapters	3
Number of Citations	> 480 Citations
Scopus H-index:	14

Membership of Professional Associations

- Institute of Electrical and Electronics Engineers (IEEE)
- IEEE Photonics Society
- Optical Society of America (OSA)
- Society of Photo-Optical Instrumentation Engineers (SPIE)
- Applied Computational Electromagnetic Society (ACES)
- Egyptian Syndicate of Scientific Professions
- Egyptian Society of Optical Science and Applications (ESOSA)

Reviewer (more than 11 prestigious international journals)

IEEE Photonics Journal, IEEE Photonics Technology Letters, IEEE Sensor, Journal of Microwaves, Optoelectronics and Electromagnetics Applications, Journal of Applied Optics, Journal of the Optical Society of America B, Optics Communications (Elsevier), Solar Energy (Elsevier), Photonics-and-Nanostructures-Fundamentals-and-Applications (Elsevier), Optics Express, Optics Letters.

Appendix 1: Scientific Publications

Journals

1. Awad Khaled, Mohamed Farhat. O. Hameed , **Mohamed Hussein**, B. M. A. Rahman, K.T. V. Grattan, S. S. A. Obayya, " *Modeling and characteristics of a nanostructured NiO/GeSe core-shell perovskite solar cell*", **J. Opt. Soc. Am. B (JOSA B)**, Vol. 38 (11), November 2021.
2. Ramy El-Bashar, **Mohamed Hussein**, Salem Hegazy, yehia badr, Mohamed Hameed, Salah Obayya, " *Analysis of Highly Efficient Quad-Crescent-Shaped Si Nanowires Solar Cell*", **Optics Express**, Vol. 29 (9), April 2021.
3. Asmaa Mohamed A. Aly, **Mohamed Hussein**, Ashraf Yahia, Mohamed Farhat O. Hameed, and S. S. A. Obayya, " *Highly efficient SiO₂ trapezoidal grating-based thin-film solar cell* ", **J. Opt. Soc. Am. B (JOSA B)**, Vol. 38 (3), 922-931, 2021.
4. Mohamed Elsaid , Korany R. Mahmoud , Mohamed F. O. Hameed and Salah S. A. Obayya, **Mohamed Hussein**, " *Improvement of sectoral horn nanoantenna based on arc directors for point to point communications*" , **J. Optical and Quantum Electronics**, Vol. 37 (4), 2021.
5. Fatma Moawad Abdel Hamied, Korany Mahmoud, **Mohamed Hussein**, and Salah S. A. Obayya, " *Design and Analysis of Rectangular Spiral Nano-Antenna for Solar Energy Harvesting*," **Progress In Electromagnetics Research C**, Vol. 111, 25-34, 2021.
6. M. A. elrabiay, **Mohamed Hussein**, M.F.O. Hameed, and S. S. A. Obayya, " *Light Absorption Enhancement in Ultrathin Film solar cell with Embedded Dielectric Nanowires*", **Scientific Reports** Vol. (10), Article number: 17534, October 2020.
7. Awad Khaled, Mohamed Farhat. O. Hameed , B. M. A. Rahman, K.T. V. Grattan, S. S. A. Obayya, **Mohamed Hussein**, " *Characteristics of Silicon Nanowire Solar Cells with Crescent Nanohole*", **Optics Express**, Vol. 28 (21), October 2020.
8. Amr Hisham K. Mahmoud , Fatma M. H. Korany, Christen Tharwat, **Mohamed Hussein**, Mohamed A. Swillam, S. S. A. Obayya, Mohamed Farhat O. Hameed " *Surface roughness effect on characteristics of Si nanowire solar cell*", **Journal of Photonics for Energy**, Vol. 10 (4), October 2020.
9. Mohamed Elsaid , Korany R. Mahmoud , Mohamed F. O. Hameed and Salah S. A. Obayya, **Mohamed Hussein**, " *Broadband Directional Rhombic Nanoantenna for Optical Wireless Communications Systems*" , **J. Opt. Soc. Am. B (JOSA B)**, Vol. 37 (4), 1183-1189, April 2020.
10. **Mohamed Hussein**, Amr Hisham Mahmoud, Mohamed Farhat O. Hameed, H. Abdelhamid and Salah Obayya, " *Electrical Characteristics of Modified Truncated Cone Nanowire for Efficient Light Trapping*" , **J. Photonics and Nanostructures - Fundamentals and Applications**, Vol. 38 (2020), Feb 2020.
11. B. Younis, A. M Heikal, **Mohamed Hussein**, Mohamed Farhat O. Hameed, and S. S. A. Obayya, " *Hybrid Si-VO₂ Modulator with Ultra High Extinction Ratio based on Slot TM Mode*", **Optics Express**, Vol. 27 (26), December 2019.
12. G. Y. Abdelatif, Mohamed Farhat O. Hameed, S. S. A. Obayya, and **Mohamed Hussein**, " *Ultrabroadband absorber based on a funnel-shaped anisotropic metamaterial*," **J. Opt. Soc. Am. B (JOSA B)**, Vol. 36 (10), 2889-2895, October 2019.
13. Mohamed Elsaid , Korany R. Mahmoud , **Mohamed Hussein** , Mohamed F. O. Hameed , Ashraf Yahia and Salah S. A. Obayya, " *Ultra-wideband circularly polarized crossed-dual-arm bowtie dipole antenna backed by an artificial magnetic conductor*" **Microwave and Optical Technology Letter** , August 2019.

14. Fatma E. Helmy, **Mohamed Hussein**, Mohamed Farhat. O. Hameed, Ahmed Shaker, M. El-Adawy, and S. A. Obayya, "Effect of Yagi-Uda Nano-antenna Element Shape on the Directivity and Radiation Efficiency", **Optical and Quantum Electronics**, Vol. 51(120), April **2019**.
15. Amr Hisham Mahmoud, **Mohamed Hussein**, Mohamed Farhat O. Hameed, M. Abdel-Aziz, H. M. Hosny and Salah Obayya, "Optoelectronic performance of modified nanopyramid solar cell", **Opt. Soc. Am. B (JOSA B)**, Vol. 36 (2), Feb **2019**.
16. Ghada Yassin Abdel-Latif , Mohamed Farhat O. Hameed , **Mohamed Hussein** , Maher Abdel Razzak and S. S. A. Obayya "Characteristics of highly efficient star-shaped nanowires solar cell", **Journal of Photonics for Energy**, Vol. 1 (4), October **2018**.
17. AbdelRahman Ghanim, **Mohamed Hussein**, Mohamed Farhat O. Hameed, Salah Obayya, "Design Consideration of Super Directive Nanoantennas for Core Shell Nanowire", **Opt. Soc. Am. B (JOSA B)**, Vol. 35 (1), January **2018**.
18. **Mohamed Hussein**, Kornay Mahmoud, Mohamed Farhat O. Hameed and Salah Obayya, "Optimal Design of Vertical Silicon Nanowires Solar Cell Using Hybrid Optimization Algorithm", **Journal of Photonics for Energy**, Vol. 8 (2), April **2018**.
19. Fatma M.H. Korany, Mohamed Farhat O. Hameed, **Mohamed Hussein**, Roaa Mubarak, Mohamed I. Eladawy and S. S. A. Obayya, "Conical structures for highly efficient solar cells applications", **Journal of Nanophotonics**, Vol. 12(1), March **2018**.
20. Kornay Mahmoud, **Mohamed Hussein**, Mohamed Farhat O. Hameed and Salah Obayya, "Super Directive Yagi-Uda Nano-Antenna with Ellipsoid Reflector for Optimal Radiation Emission", **Opt. Soc. Am. B (JOSA B)**, Vol. 34 (10), October **2017**.
21. Ghada Yassin Abdel-Latif , Mohamed Farhat O. Hameed , **Mohamed Hussein** , Maher Abdel Razzak and S. S. A. Obayya "Electrical Characteristics of Funnel-Shaped Silicon Nanowires Solar Cell", **Journal of Photonics for Energy**, Vol. 7 (4), December **2017**.
22. Youssef El-Toukhy, **Mohamed Hussein**, Mohamed Farhat O. Hameed and Salah Obayya, "Characterization of Asymmetric Tapered Dipole Nanoantenna for Energy Harvesting Applications", **journal of plasmonic**, Springer, Feb **2017**.
23. AbdelRahman Ghanim, **Mohamed Hussein**, Mohamed Farhat O. Hameed, Ashraf Yahia, Salah Obayya, "Highly directive hybrid Yagi-Uda nanoantenna for directional emission enhancement", **IEEE photonics**, Vol. 8 (5), Oct. **2016**.
24. Youssef M. El-Toukhy, **Mohamed Hussein**, Mohamed Farhat O. Hameed, A. M Heikal, M. M. Abd-Elrazzak, and S. S. A. Obayya, "Optimized tapered dipole nanoantenna as efficient energy harvester", **Optics Express**, Vol. 24 (14), **2016**.
25. **Mohamed Hussein**, Mohamed F. O. Hameed, Nihal F. F. Areed, S. S. A. Obayya "Funnel-shaped silicon nanowire for highly efficient light trapping", **Optics Letter**, Vol. 41(5), **2016**.
26. **Mohamed Hussein**, Mohamed F. O. Hameed, Nihal F. F. Areed, S. S. A. Obayya, " Ultra High Efficient Solar Cell Based on Decagonal Arrays of Silicon Nanowires ", **Opt. Eng.** Vol. 53(11), **2014**.
27. **Mohamed Hussein**, Nihal F. F. Areed, Mohamed F. O. Hameed, S. S. A. Obayya, "Design of Flower-Shaped Dipole Nano- Antenna for Energy Harvesting", **IET Transactions of Optoelectronics**, **2014**.
28. **Mohamed Hussein**, Yohandri, Josaphat Tetuko Sri Sumantyo, A.H.Yahia, "A Low Side Lobe Level of Circularly Polarized Microstrip Array Antennas for CP-SAR Sensor", **Journal of Electromagnetic Waves and Applications**, **2013**.
29. A.H. Yahia, N. M. Shaalan, M. A. El-Aasser, **M. H. Abdel-Razik**, "Modeling & Simulation of Nanotechnology-Based Tag Antennas", **Journal of Materials Science and Engineering**, Vol. 5(1), USA, **2011**.
30. A.H. Yahia, N.M. Shaalan, M.A. El-Aasser, **M.H. Abdel-Razik**, "Simulation of Electromagnetic Radiation Patterns of Microstrip Antennas in RFID Systems", **Journal of Materials Science and Engineering**, Vol. 5(3), USA, **2011**.

	Book Chapters
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| 1. Mohamed Hussein , Mohamed Farhat O. Hameed and Salah Obayya, " <i>Recent Trends In Plasmonic Nanowire Solar Cells</i> ", Published in Book title: Nanowires, Publisher InTECH, Croatia, July 2017 . |
| 2. Mohamed Farhat O. Hameed , Youssef El-Toukhy, Mohamed Hussein and Salah Obayya, " <i>Tapered Plasmonic Nanoantennas for Energy Harvesting Applications</i> ", published in Book title: Nanoplasmonics - Fundamentals and Applications, Publisher InTECH, Croatia, June 2017 . |
| 3. S. S. A. Obayya, Nihal F. F. Areed, Mohamed Farhat O. Hameed and Mohamed Hussein , " <i>Optical Nano-Antennas for Energy Harvesting</i> ", Published in "Innovative Materials and Systems for Energy Harvesting Applications", IGI Publisher USA, 2015 . |

	Conference Proceedings
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| 1. A Khaled ¹ , M Hussein , B.M.A Rahman , K.T.V Grattan , M.F. O Hameed and S.S.A Obayya" <i>Highly Efficient Perovskite Solar Cell</i> ", Semiconductor Integrated Optoelectronics Conference (SIOE), Cardif, UK, 2021. |
| 2. A.H.K Mahmoud , M.Hussein , M.F.O Hameed and S.S.A Obayya," <i>Highly Efficient Multi-Junctional Nanowires Solar Cell</i> ", Semiconductor Integrated Optoelectronics Conference (SIOE), Cardif, UK, 2021. |
| 3. Mohamed Elsaid , K. R. Mahmoud , Mohamed Hussein , Mohamed Farhat O. Hameed, S. S. A. Obayya," <i>Dual-Arm Horn Nano-Antenna for Wireless Communications</i> ", Semiconductor Integrated Optoelectronics Conference (SIOE), Cardif, UK, 2021 |
| 4. R. El-Bashar, M Hussein , S. F Hegazy, Y Badr, S.S.A Obayya , M.F.O. Hameed," <i>Cross-shaped-silicon nanowires for highly efficient solar cell</i> ", Semiconductor Integrated Optoelectronics Conference (SIOE), Cardif, UK, 2021. |
| 5. M.A Elrabiaey, M Hussein , M.F.O Hameed , and S.S.A Obayya " <i>Enhanced light trapping in thin film solar cell</i> ", Semiconductor Integrated Optoelectronics Conference (SIOE), Cardif, UK, 2021. |
| 6. G.Y Abdelatif, M.F.O Hameed, M Hussein , S.S.A Obayya," <i>Efficient Nanowire Solar Cell with Surface Texturing</i> ", Semiconductor Integrated Optoelectronics Conference (SIOE), Cardif, UK, 2021. |
| 7. F. M. Abdel Hamied, K. R. Mahmoud, M. Hussein and S. S. A. Obayya, " <i>Design and Analysis of Hexagonal Dipole Nano-Rectenna Based on MIIM Diode for Solar Energy Harvesting</i> ," 2020 8 th International Japan-Africa Conference on Electronics, Communications, and Computations (JAC-ECC), Alexandria, Egypt, 2020. |
| 8. B. M. Younis, A. M. Heikal, M. Hussein , S. S. A. Obayya and Mohamed Farhat O. Hameed, " <i>Design of a Wideband and High Figure-of-Merit VO₂ Modulator</i> ," ICMSE-RAC 2020. The 3rd International Conference on Materials Science and Engineering- Recent Advances and Challenges 15-17 March 2020 , Alexandria (Postponed due to COVID 19). |
| 9. Mohamed Hussein , Mohamed Farhat O. Hameed, S. S. A. Obayya, " <i>Novel Nanoantenna for Solar Energy Harvesting</i> ", ICMSE-RAC 2020. The 3rd International Conference on Materials Science and Engineering- Recent Advances and Challenges. 15-17 March 2020 , Alexandria (Postponed due to COVID 19) |
| 10. M. Hamamou, M. A. Elrabiaey, Mohamed Hussein , S. S. A. Obayya and Mohamed Farhat O. Hameed, " <i>Highly Efficient Thin Film Solar Cell with Surface Textures</i> ", The XXXIII International Conference |

Materials Science And Applications & Workshop on Nanomaterials and Graphene Applications 27 – 30 November 2019 Hurgada – Egypt.
11. B. M. Younis, A. M. Heikal, Mohamed Hussein , S. S. A. Obayya, and Mohamed Farhat O. Hameed, “ <i>Analysis of Hybrid Plasmonic Si-VO₂</i> ,” The XXXIII International Conference Materials Science and Applications & Workshop on Nanomaterials and Graphene Applications 27 – 30 November 2019 Hurgada – Egypt.
12. R. El-Bashar, M. Hussein , S. F. Hegazy, Y. Badr, Mohamed Farhat O. Hameed, S S. A. Obayya, “ <i>Highly Efficient Crescent-Shaped Si Nanowire Solar Cells</i> ,” The 10th International Conference on Laser Applications (ICLA 10), NILES Institute, Cairo University, 23 rd – 28 th November 2019 .
13. Mohamed Hussein , Kornay Mahmoud, Mohamed Farhat. O. Hameed and S. S. A. Obayya, “ <i>Characteristics of asymmetrical tapered nano-cone solar cells</i> ”, SPIE Photonics West, San Francisco, California, United States, Feb 2019 .
14. A. H. K. Mahmoud, Mohamed Hussein , Kornay Mahmoud, Mohamed Farhat. O. Hameed and S. S. A. Obayya, “ <i>Characteristics of modified nano-pyramid silicon solar cells</i> ”, SPIE Photonics West, San Francisco, California, United States, Feb 2019 .
15. Fatma E. Helmy, Mohamed Hussein , Mohamed Farhat. O. Hameed, Ahmed Shaker, and S. S. A. Obayya, “ <i>Metallo-dielectric Yagi-Uda Nanoantennas based on cuboid shell elements</i> ”, SPIE Photonics West, San Francisco, California, United States, Feb 2019 .
16. Fatma E. Helmy, Mohamed Hussein , Mohamed Farhat. O. Hameed, Ahmed Shaker, M. El-Adawy, and S. S. A. Obayya, “ <i>Optimal Design of Yagi-Uda Nanoantennas based on Elliptic Elements Shape</i> ”, SPIE Photonics Europe, Strasbourg Convention & Exhibition Centre, Strasbourg, France, 22 - 26 April 2018 .
17. Fatma M.H. Korany , Mohamed Farhat. O. Hameed, Mohamed Hussein , Ahmed Shaker, M. El-Adawy, and S. S. A. Obayya, “ <i>Modified conical silicon nanowires for highly efficient light trapping</i> ”, SPIE Photonics Europe, Strasbourg Convention & Exhibition Centre, Strasbourg, France, 22 - 26 April 2018 .
18. Mostafa AbdAllah M. Hassan, Mohamed Farhat O. Hameed, Mohamed Hussein and S. S. A. Obayya, “ <i>Funnel-Shaped Silicon Nanowire with an Alternative Plasmonic Materials for Highly Efficient Light Trapping</i> ”, SPIE Photonics Europe, Strasbourg Convention & Exhibition Centre, Strasbourg, France, 22 - 26 April 2018 .
19. A.H.K. Mahmoud, M.F.O. Hameed, M. Hussein , S.S.A. Obayya, “ <i>Highly efficient light trapping design for thin film solar cell</i> ”, The 26th International Workshop on Optical Wave & Waveguide Theory and Numerical Modelling will be held in Bad Sassendorf, Germany, on Friday, April 13, and Saturday, April 14, 2018 .
20. Mohamed Hussein , Mohamed Farhat O. Hameed, Mohamed A. Swillam and S. S. A. Obayya, “ <i>Electrical Characteristics of Silicon Nanowires Solar Cells with Surface Roughness</i> ”, SPIE Photonics West, San Francisco, California, United States, Feb 2018.
21. A. H. K. Mahmoud, Mohamed Farhat O. Hameed, Mohamed Hussein , S. S. A. Obayya, " <i>Novel design of silicon nanowire for efficient light trapping</i> ," Ansole Days 2017: Hammamet, Tunisia, May 5 th -8 th 2017 .
22. Fatma Mahmoud, Mohamed Hussein , Mohamed Farhat O. Hameed, S.S.A.Obayya, " <i>Highly Efficient Conical Nanowires Solar Cell</i> ,"Ansole Days 2017: Hammamet,Tunisia, May 5 th -8 th 2017 .
23. Ghada Yassin Abdel-Latif, Mohamed Farhat O. Hameed, Mohamed Hussein , S. S. A. Obayya " <i>Electrical Performance of Highly efficient Silicon Nanowires Solar Cell</i> ," Ansole Days 2017: Hammamet, Tunisia, May 5 th -8 th 2017 .
24. Mohamed Hussein , K. R. Mahmoud, Mohamed Farhat O. Hameed, S. S. A. Obayya, " <i>Broadband absorption enhancement in disordered silicon nanowire solar cells</i> " Ansole Days 2017: Hammamet, Tunisia, May 5 th -8 th 2017 .
25. Mohamed Hussein , Mohamed Farhat O. Hameed, S. S. A. Obayya, " <i>Novel Design of Plasmonic Nanowire Solar Cell</i> ," Ansole Days 2017: May Hammamet, Tunisia, 5 th -8 th 2017 .

26. **Mohamed Hussein**, Mohamed Farhat O. Hameed, Mohamed A. Swillam, S. S. A. Obayya, “ *Effective Modelling of Silicon Nanowire Solar Cells,*” International Applied Computational Electromagnetics Society (ACES) Symposium, , Firenze, Italy, March 26-30, **2017**.

27. Salah Obayya, **Mohamed Hussein**, Mohamed Hameed, Nihal Areed, “*New Trends in Nanowire Solar Cells*”, European Optical Society Bi-Annual Meeting (EOSAM), Germany, **2016**.

28. Salah Obayya, Youssef El-Toukhy, **Mohamed Hussein**, Mohamed Hameed, Ahmed Heikal, Maher Abd-Elrazzak, “ *Novel design of graded dipole nano-antenna for energy harvesting applications*”, European Optical Society Bi-Annual Meeting (EOSAM), Germany, **2016**.

29. AbdelRahman Ghanim, **Mohamed Hussein**, Mohamed Farhat O. Hameed, Ashraf Yahia, Salah Obayya, “*Novel Design of High Directivity Hybrid Yagi-Uda Antenna*”, The 4th Advanced Electromagnetics Symposium, Spain, **2016**.

30. **Mohamed Hussein**, Mohamed Farhat O. Hameed, Nihal F. F. Areed , S. S. A. Obayya “*Novel Design of Highly Efficient Silicon Nanowire Solar Cell,*” 5th Anniversary of ANSOLE (2011-2016): International Conference on Renewable Energy (INCORE2016), Zewail City of Science and Technology, Egypt, 3-6 February **2016**.

31. Yara M ElSebaai, **Mohamed Hussein**, Mohamed Farhat O. Hameed, Nihal F. F. Areed, S. S. A. Obayya, “*Broadband Absorption enhancement in a hybrid diamond-silicon nanowire arrays for photovoltaics applications*”, 5th Anniversary of ANSOLE (2011-2016): International Conference on Renewable Energy (INCORE2016), Zewail City of Science and Technology , Egypt, 3-6 February **2016**.

32. **Mohamed Hussein**, Nihal F. F. Areed, Mohamed Farhat O. Hameed, S. S. A. Obayya, “*Modified Elliptical Nanoantenna for Energy Harvesting Applications*”, Presented in ACES conference, USA, **2016**.

33. **Mohamed Hussein**, Mohamed F. O. Hameed, Nihal F. F. Areed, S. S. A. Obayya , “*Absorption enhancement in a novel hybrid silicon diamond nanowire for solar cell applications*” , ISFOE conference, Greece, **2015** .

34. **Mohamed Hussein**, Nihal F. F. Areed, Mohamed Farhat O. Hameed, S. S. A. Obayya, “*Hybrid Core Semiconductor Nanowires for Solar Cell Applications*”, NUSOD conference, Spain, **2014**.

35. **Mohamed Hussein**, Nihal F. F. Areed, Mohamed F. O. Hameed, S. S. A. Obayya, “*Analysis of a novel decagonal semiconductor nanowires for solar cell applications* ” , Photonics Europe, Brussels, Belgium, **2014**.

36. **Mohamed Hussein**, Nihal F. F. Areed, Mohamed Farhat O. Hameed, and S. S. A. Obayya, “*Flower-shaped Dipole Based Nano-antenna for Energy Harvesting*”, PIERS, Stockholm, Sweden, **2013**.

37. A.H. Yahia, N. M. Shaalan, M. A. El-Aasser, **M. H. Abdel-Razik**, “ *Modeling & Simulation of Nanotechnology-Based Tag Antennas*”, Third Arab International Conference in Physics and Materials Science, Bibliotheca Alexandria, Egypt, **2009**.

38. A.H. Yahia, N.M. Shaalan, M.A. El-Aasser, **M.H. Abdel-Razik**, “*Simulation of Electromagnetic Radiation Patterns of Microstrip Antennas in RFID Systems*”, Third Arab International Conference in Physics and Materials Science, Bibliotheca Alexandria, Egypt, **2009**.

Appendix 2: Academic Teaching

Assistant Professor (full-time)	Physics Department, Faculty of Science, Ain Shams University, Cairo, Egypt.	May 2016 –Jan.2017 August 2017 – Present
	Teach several Undergraduate and M.Sc. courses include:	
	• Computational Electromagnetics	Phy 625 (2018&2019&2020)
	• Introduction to electronics	Phy 212 (2017)
	• Analog Telecommunication	Phy 322 (2016 &2017)

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	• Analog Electronics	Phy 303 (2017)
	• Digital Electronics	Phy 326 (2017&2019)
	• Digital Telecommunication	Phy 432 (2017&2018&2019)
	• Network	Phy 438 (2018&2020)
	• Antenna theory	Phy 434 (2018&2019)
	• Power Electronics	Phy 437 (2020)

Teaching Assistant <i>(full-time)</i>	Physics Department, Faculty of Science, Ain Shams University, Cairo, Egypt.	March 2008-Jan 2012 August 2012- May 2016
	Teach several Undergraduate courses include:	
	• Antennas	Phy 434 (2013&2014&2015)
	• Microwaves	Phy 322 (2013&2015)
	• Analog Electronics	Phy 321 (2010& 2011)
	• Electric circuits	Phy 321 (2009&2010&2011)
	• Digital Electronics	Phy 326 (2012&2014)
	• Analog Telecom	Phy 322 (2011& 2012&2013)
	• Digital Telecom	Phy 432 (2012&2014)

Teaching Assistant <i>(full-time)</i>	Physics Department, Faculty of Science, Ain Shams University, Cairo, Egypt.	March 2008-Jan 2012 August 2012- May 2016
	Undergraduate Lab preparation and managements include:	
	• Physics Lab1	Electricity and Magnetism Lab (2008- 2016)
	• Electronics Lab I	Analog Electronics Lab (2008 - 2016)
	• Electronics Lab II	Digital Electronics Lab (2008 - 2016)
	• Circuit Design, Simulation Implementation Lab.	Circuit Design Lab (2008 - 2016)
	• Computer Networks Lab.	Networks Lab (2013&2015)
	• Optical communication Lab	Optical communication Lab (2010&2014)
	• Microwaves & Antennas Lab	Microwaves & Antennas (2008 -2014)