

Curriculum Vitae

Sabah M. Mohammad, Ph.D

Senior Lecturer

**Institute of Nano Optoelectronics Research and
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Personal Information

Full Name: Sabah M. Mohammad

Present Position : Senior Lecturer

Institute of Nano Optoelectronics Research and Technology (INOR),
Universiti Sains Malaysia (USM)

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Universiti Sains Malaysia, 11800 USM, Penang, Malaysia.

Researcher ID: F-4514-2019

Scopus Author ID: 56090950300

Google Scholar: <https://scholar.google.com/citations?user=7JLwuLsAAAAJ&hl=en>

ResearchGate: https://www.researchgate.net/profile/Sabah_Mohammad

ORCID <https://orcid.org/0000-0002-7691-0508>

Education

Ph.D. Universiti Sains Malaysia (USM), Malaysia. (2017)

Research area: Applied and Engineering Physics.

Field: Semiconductor Fabrication (Thin Film, Epitaxy, and Nano-Structures)

Title of thesis: Growth of ZnO Nanorods Using Hydrothermal and Modified
Chemical Bath Deposition for Device Applications.

Master Universiti Sains Malaysia (USM), Malaysia. (2013)

Programme Mode: coursework

Master of Physics-solid state

Title of project: Metal Semiconductor Metal Photodetector

Grade: 3.10

Bachelor Salahaddin University (SUI), Iraq. (1991)

Bachelor's Degree of Science (Physics)

Ranked as the 9th top student out of 60.

Work Experience

➤ **Senior Lecturer** **October/2018 – now**

Institute of Nano Optoelectronics Research and Technology (INOR), Universiti Sains Malaysia (USM).

➤ **Teaching Fellow** **Year: 15/02/2018-30/10/2018**

Institute of Nano Optoelectronics Research and Technology (INOR), Universiti Sains Malaysia (USM).

➤ **Researcher** **Year: 2013-2017**

Graduate research assistant (GRA) attached to the school of physics/USM/Pinang/Malaysia.

➤ **Researcher** **1993-1999**

Department head of the research group for the electro-glass department at Atomic Energy Commission, Iraq.

Biography

Sabah M. Mohammad currently serving as a Senior Lecturer at Institute of Nano Optoelectronics Research and Technology (INOR), Universiti Sains Malaysia (USM). Sabah, has been contributed to the development of the Institute of Nano Optoelectronics Research and Technology (INOR) since it's starting and he continues in that so far. Sabah, is a Senior lecturer specializing in the areas of preparation and characterization of 1D, 2D and 3D semiconductor materials and metal nanoparticles such as GaN, ZnO, other metal oxides and porous semiconductors materials for application in optoelectronic and electronic devices. As well as Fabrication and characterization of optoelectronic and electronic devices such as LEDs, Solar cells, Photodetectors, Gas sensors and other sensors based on nanostructures wide bandgap semiconductor materials. He is also a member of the Malaysian Solid State Science and Technology Society (MASS), Alumni of Universiti Sains Malaysia (USM), and Iraqi Society of Physics and Mathematics as well. During 2018, he was working as Teaching fellow at INOR-Universiti Sains Malaysia (USM). He has published a patent on the fabrication of nano-size junction LED device. He also has authored over 34 academic papers related to his research area. He started his research career (from 1993-1999) as department head of research group for the electro-glass department at Atomic Energy Commission, Iraq. Latter from 2001-2010. With his Ph.D. Degree study, he worked as a Graduate Research Assistant (GRA), attached with the school of physics, USM, Malaysia. His role was to teach the undergraduate and master students in their project dissertation and research works. In 1991. he received his bachelor's degree in

Science (BSc), Physics, at the school of physics, Salahaddin University, Iraq (SUI). In 2013, he received his master (MSc) degree in the solid state, at the school of physics, USM, by mode program of coursework, with the title of project “Metal-Semiconductor-Metal photodetector”. He completed his Ph.D. Degree in 2017, at the school of physics, USM. His doctorate was in the solid state with the research area of “Applied and engineering physics”, [Semiconductor of fabrication (thin Film, Epitaxy and Nano Structured)]. The title of his thesis was “Growth of ZnO Nanorods Using Hydrothermal and Modified Chemical Deposition for Devices Applications”. He believes that one of his most important career goals is to put and add all his skills and knowledge and professional experience in the field of the modern solid state physics and nanotechnology to the academic and researches goals of the university, and Development of laboratories for teaching students learn best so they can relate learning to their world, hence, the development of creative abilities and skills of students.

List of Scientific Articles and Patent

Note: All articles are available at:

Google scholar: Sabah M. Mohammad

Web: <https://scholar.google.com/citations?user=7JLwuLsAAAAJ&hl=en>

ResearchGate: Sabah M. Mohammad

Web: https://www.researchgate.net/profile/Sabah_Mohammad

I. Patent

a) (2020) In the process as an international patent (Status: under review)

Filing Date: 31 March 2017.

PCT International Patent Application Number: PCT/MY2017/050013

Title: “*Direct heat substrate-modified chemical bath deposition system for growth of ultra long zinc oxide (ZnO) Nanorods and process for fabrication of a nano-size junction LED*”. Zainuriah Hassan, Sabah M. Mohammad, Naser Mahmoud Ahmed. Filing Date: 31 March 2017. <https://patents.google.com/patent/WO2017222364A1/en>

b) Malaysian Patent

Filing Date: 22 June 2016, MyIPO Application Number: PI 2016702309

Title: *Direct heat substrate-modified chemical bath deposition system for growth of ultra long zinc oxide (ZnO) Nanorods and process for fabrication of a nano-size junction LED*. Zainuriah Hassan, Sabah M. Mohammad, Naser Mahmoud Ahmed

Available at:

http://ipjournal.myipo.gov.my/ipjournal/index.cfm?pg=publication/18month_details&id=12&year=2017&page=6

II. Scientific Articles

1. **Sabah M. Mohammad**, Z. Hassan, Nabeel M. Abd-Alghafour, Amal Mohamed Ahmed Ali, Naser M. Ahmed, Raed Abdalrheem, F.K. Yam, Naveed Afzal.” Ultraviolet electroluminescence from flowers-like n-ZnO nanorods/p-GaN light-emitting diode fabricated by modified chemical bath deposition”. *Journal of Luminescence*.(2020), <https://doi.org/10.1016/j.ilumin.2020.117510> [ISI], [Q1, IF= 3.28].
2. Suvindraj a/l Rajamanickam, **Sabah M. Mohammad** and Z. Hassan” Effect of zinc acetate dihydrate concentration on morphology of ZnO seed layer and ZnO nanorods grown by hydrothermal method” *Colloid and Interface Science Communications*, <https://doi.org/10.1016/j.colcom.2020.100312>, [ISI], [Q2, IF= 2.831].
3. Suvindraj a/l Rajamanickam, **Sabah M. Mohammad** and Z. Hassan,” Effect of Substrates on Structural, Morphological, Optical and Electrical Characteristics on Poly (9,9-di-n-octylfluorenyl-2,7-diyl) (PFO) Thin Films” *ECS Journal of Solid State Science and Technology* (2020): <https://doi.org/10.1149/2162-8777/ab6bc7> [ISI], [Q3, IF= 2.142].
4. NM Abd-Alghafour, Ghassan Adnan Naeem, Naveed Afzal, **Sabah M Mohammad**, Rasim Farraj Muslim “ Fabrication and characterization of ethanol gas sensor based on hydrothermally grown V2O5 nanorods”, *Optic* (2020) <https://doi.org/10.1016/j.ijleo.2020.165441> [ISI], [Q2, IF= 2.187].
5. Khai Shenn Lau, Zainuriah Hassan, Way Foong Lim, **Sabah M Mohammad**, Hock Jin Quah.” Effect of microwave time on the structural and luminescence properties of YAG: Ce prepared by microwave solution combustion (MSC) synthesis” *Optik*, (2020): <https://doi.org/10.1016/j.ijleo.2020.164437>, [ISI], [Q2, IF= 2.187].
6. **Sabah M Mohammad**, Nabeel M Abd-Alghafour, Z Hassan, Naser M Ahmed, Amal Mohamed Ahmed Ali, Raed Abdalrheem, Mundzir Abdullah, “Fabrication and Characterization of Light Emitting Diode Based on n-ZnO Nanorods Grown Via a Low-Temperature” Optical limiting behaviour of linear fused ring dichloro-substituent chalcone isomers” *Journal of Physics: Conference Series*, IOP Publishing (2020) <https://doi.org/10.1088/1742-6596/1535/1/012009> [Scopus].
7. NM Abd-Alghafour, Ghassan Adnan Naeem, **Sabah M Mohammad**.” Dependence of V2O5 Nanorods Properties on Substrate Type Prepared by Simple Hydrothermal Method” *Journal of Physics: Conference Series*, IOP Publishing (2020) <https://doi.org/10.1088/1742-6596/1535/1/012046> [Scopus].
8. Hayder Salah Naeem, Naser M Ahmed, **Sabah M Mohammad**, M Al Shafouri. “Investigation of Arabic gum optical properties as UV-Blue light down conversion for light emitting diode application” *Journal of Physics: Conference Series*, IOP Publishing (2020) <https://doi.org/10.1088/1742-6596/1535/1/012022>. [Scopus].
9. Amal Mohamed Ahmed Ali, Naser M Ahmed, Norlaili A Kabir, **Sabah M Mohammad**.” Investigation on the characteristics of ZnO and ZnO-Pb structure for gamma radiation detection” *Journal of Physics: Conference Series*, IOP Publishing (2020) <https://doi.org/10.1088/1742-6596/1535/1/012028>. [Scopus].

10. Mundzir Abdullah, Dian Alwani Zainuri, Suhana Arshad, Ibrahim Abdul Razak, Heng Han Yann, **Sabah M Mohammad**, Siti Nur'Adiilah Mohd Shazla." Optical limiting behaviour of linear fused ring dichloro-substituent chalcone isomers" Journal of Physics: Conference Series, IOP Publishing (2020) <https://doi.org/10.1088/1742-6596/1535/1/012034>. [Scopus].
11. Nabihah Kasim, Zainuriah Hassan, Way Foong Lim, **Sabah M Mohammad**, Hock Jin Quah."Morphological and Structural Properties of Sol-Gel Derived ZnO Thin Films Spin-Coated on Different Substrates" Solid State Phenomena: : Conference Series.(2020) <https://doi.org/10.4028/www.scientific.net/SSP.301.35>. [Scopus].
12. Amal Mohamed Ahmed Ali, Naser M. Ahmed, **Sabah M. Mohammad**, Fayroz A. Sabah, Emad Kabaa, Ahmed Alsadig, A.Sulieman, Effect of gamma irradiation dose on the structure and pH sensitivity of ITO thin films in extended gate field effect transistor. Results in Physics. <https://doi.org/10.1016/j.rinp.2018.10.066> (2019), [ISI], [Q1, IF= 4.019].
13. Raed Abdalrheem, F K Yam, Abdul Razak Ibrahim, H S Lim, K P Beh, Ammar A Oglat, Naveed Afzal, Khaled M Chahrour and **Sabah M Mohammad**. Effect of Ni and Cu catalysts on graphene growth under different ethanol flow rates using atmospheric pressure chemical vapor deposition, Materials Research Express, (2019), [ISI], [Q3, IF= 1.65].
14. N. M. Abd-Alghafour, **Sabah M. Mohammed**, Naser M. Ahmed, Z. Hassan, Munirah Abdullah Almessiere, Naveed Afzal, M. Bououdina, Optimization of Precursor Concentration for the Fabrication of V₂O₅ Nanorods and their MSM Photodetector on Silicon Substrate. Journal of Electronic Materials (2019), [ISI], [Q3], IF= 1.774].
15. Raed Abdalrheem, F.K. Yam, Abdul Razak Ibrahim, H.S. Lim, K.P. Beh, Anas A. Ahmed, Ammar A. Oglat, Khaled M. Chahrour, Omar F. Farhat, Naveed Afzal, **Sabah M. Mohammad**, And M.Z. Mat Jafri, Improvement in Photodetection Characteristics of Graphene/pSilicon Heterojunction Photodetector by PMMA/Graphene Cladding Layer, Journal of Electronic Materials, (2019), [ISI], [Q3], IF= **1.774**].
16. **Sabah M. Mohammad**, Nabeel M. Abd-Alghafour, Rawnaq A. Talib, Z Hassan, Naser M. Ahmed, AA. Abuelsamen, and Naveed Afza." *Influence of growth temperature and duration on different properties of ultra-long ZnO nanorods grown by modified chemical bath deposition method*", Materials Research Express, (2018), [ISI], [Q3], IF= 1.65].
17. **Sabah M. Mohammad**, Z Hassan, Rawnaq A. Talib, Naser M. Ahmed, Mohammed A. Al-Azawi, Nabeel M. Abd-Alghafour, and C.W. Chin, N.H. Al-Hardan. "*Fabrication of a highly flexible low-cost H₂ gas sensor using ZnO nanorods grown on an ultra-thin nylon substrate.*" Journal of Materials Science: Materials in Electronics: (2016) (Vol 27, issue 9). DOI: 10.1007/s10854-016-4993-4 [ISI], [Q2, IF= 2.22].
18. **Sabah M. Mohammad**, Z Hassan, Naser M. Ahmed, N.H. Al-Hardan, and M. Bououdina "*Fabrication of low cost UV photo detector using ZnO nanorods grown onto nylon substrate.*" Journal of Materials Science: Materials in Electronics 26.3 (2015):1322-1331. DOI: 10.1007/s10854-014-2542-6 [ISI], [Q2, IF= 2.22].
19. **Sabah M. Mohammad**, Z Hassan, Naser M. Ahmed, Rawnaq A. Talib, Nabeel M. Abd-Alghafour, and A. F. Omar: "*Hydrothermal growth and characterization of vertically well-aligned and dense ZnO nanorods on glass and silicon using a simple optimizer*

- system". AIP Conf. Proc, Volume 1733, Issue 1, id.020032. (2016), DOI: 10.1063/1.4948850 . [Scopus and ISI Index].
20. Rawnaq A. Talib, Naser M. Ahmed, **Sabah M. Mohammad**, M.J. Abdullah, M. Bououdina "ZnO Nanorods/Polyaniline Heterojunction onto SiO₂ for Photosensor." Journal of Nanoelectronics and Optoelectronics, Volume 13, Number 7, July (2018), pp. 1034-1040(7) [ISI], [Q4, IF= 0.771].
 21. Mohammed A. Al-Azawi, Noriah Bidin, M. Bououdina, and **Sabah M. Mohammad**. "Preparation of gold and gold-silver alloy nanoparticles for enhancement of plasmonic dye-sensitized solar cells performance" **Solar Energy** 126" (2016): 93-104. DOI: <http://doi.org/10.1016/j.solener.2015.12.043> [ISI], [Q4, IF= 4.623].
 22. M. Z. Mohd Yusoff, A. Mahyuddin, Z Hassan, H. Abu Hassan, M. J. Abdullah, M. Rusop, **S. M. Mohammad**, and Naser M. Ahmed. "AlN/GaN/AlN heterostructures grown on Si substrate by plasma-assisted MBE for MSM UV photodetector applications". **Materials Science in Semiconductor Processing** 29 (2015): 231-237. DOI: <http://doi.org/10.1016/j.mssp.2014.03.041> [ISI], [Q2, IF= 3.085].
 23. Naif H. Al-Hardan, Muhammad Azmi Abdul Hamid, Naser M. Ahmed, Azman Jalar, Roslinda Shamsudin, Norinsan Kamil Othman, Lim Kar Keng, **Sabah M. Mohammed**. "A study on the UV photoresponse of hydrothermally grown zinc oxide nanorods with different aspect ratios." **IEEE Sensors Journal** 15.12 (2015): 6811-6818. DOI: 10.1109/JSEN.2015.2464311 [ISI], [Q2, IF= 3.073].
 24. Rawnaq A. Talib, M.J. Abdullah, **Sabah M. Mohammad**, Naser M. Ahmed, Nageh K. Allam "ZnO nanorods/polyaniline-based inorganic/organic heterojunctions for enhanced light sensing applications." **ECS Journal of Solid State Science and Technology** 5.3 (2016): P142-P147. DOI: 10.1149/2.0031603jss [ISI], [Q3, IF= 2.142].
 25. Rawnaq A. Talib, M.J. Abdullah, **Sabah M. Mohammad**, Naser M. Ahmed, Nageh K Allam". *Effect of the substrate on the photodetection characteristics of ZnO-PANI composites*". **ECS Journal of Solid State Science and Technology** 5.6 (2016): P305-P308. DOI: 10.1007/s10854-014-2542-6 [ISI], [Q3, IF= 2.142].
 26. Rawnaq A. Talib, M.J. Abdullah, Husam S. Al-Salman, **Sabah M. Mohammad**, and Nageh K Allam "ZnO nanorods/polyaniline heterojunctions for low-power flexible light sensors." **Materials Chemistry and Physics** 181 (2016): 7-11. DOI: <http://doi.org/10.1016/j.matchemphys.2016.06.061> [ISI], [Q2, IF= 3.408].
 27. Rawnaq A. Talib, M.J. Abdullah, Husam S. Al-Salman, **Sabah M. Mohammad**, N. M. Ahmed, and M. Bououdina. "Effect of growth time on structure, optical and photo-response characteristics of ZnO nanorods deposited onto various substrates." **Journal of Ovonic Research** Vol 12.3 (2016): 171-184 [ISI], [Q4, IF= 0.687].
 28. N.M. Abd-Alghafour, Naser M. Ahmed, Z Hassan, **Sabah M. Mohammad**, and M. Bououdina, M.K.M. Ali "Characterization of V₂O₅ nanorods grown by spray pyrolysis technique." **Journal of Materials Science: Materials in Electronics** 27.5 (2016): 4613-4621. DOI: 10.1007/s10854-016-4338-3 [ISI], [Q2, IF= 2.22].
 29. Rawnaq A. Talib, M.J. Abdullah, Naser M Ahmed, **Sabah M. Mohammad**, and M. Bououdina. "UV sensing of twinned ZnO–PANI composite". **Applied Physics A** 122.5 (2016): 1-9. DOI: 10.1007/s00339-016-0060-5 [ISI], [Q3, IF= 1.81].

30. N.M. Abd-Alghafour, Naser Ahmed, Z Hassan, **Sabah M. Mohammad**, M. Bououdina, and M.K. M. Ali. "*Structural, morphological and optical properties of V₂O₅ nanorods grown using spray pyrolysis technique at different substrate temperature.*" *Nanoscience and Nanotechnology Letters* 8.2 (2016): 181-186. DOI: <https://doi.org/10.1166/nnl.2016.2062> [ISI], [Q4, IF= 1.128].
31. Rawnaq A. Talib, M. J. Abdullah, and **Sabah M. Mohammad**. "*Formation and analysis of ZnO-PAni hexagonal prisms composite prepared by the chemical method.*" *AIP Conf. Proc Publishing*, 2016. (IC-NET 2015). Vol. 1733. No. 1. DOI: <http://dx.doi.org/10.1063/1.4948849> [Scopus and ISI Index].
32. N. M. Abd-Alghafour, Naser M. Ahmed, Zai Hassan, **Sabah M. Mohammad**, and M. Bououdina "*Growth and characterization of V₂O₅ nanorods deposited by spray pyrolysis at low temperatures.*" *AIP Conf. Proc Publishing*, (IC-NET 2015). Vol. 1733. No. 1. DOI: <http://dx.doi.org/10.1063/1.4948844> [Scopus and ISI Index].
33. N. M. Abd-Alghafour, Naser M. Ahmed, Zai Hassan, and **Sabah M. Mohammad**. "*Influence of solution deposition rate on properties of V₂O₅ thin films deposited by spray pyrolysis technique.*" *AIP Conf. Proc Publishing*, 2016. (ICOFM 2016). Vol. 1756. No. 1. DOI: <http://doi.org/10.1063/1.4958791> [Scopus and ISI Index].

i. Conferences

1. **Sabah M. Mohammad**, Nabeel M. Abd-Alghafour, Zainuriah Hassan, Naser M. Ahmed, Amal Mohamed Ahmed Ali, Raed Abdalrheem, Mundzir Abdullah, Fabrication And Characterization Of Light Emitting Diode Based On N-Zno Nanorods Grown Via A Low-Temperature Method On P-Gan.(ICoSeMT).(2020).
2. Amal Mohamed Ahmed Ali, Naser M. Ahmed, Norlaili A. Kabir, **Sabah M. Mohammad**. Investigation The Characteristics Of ZnO Multilayer Structure For Ionization Radiation Detection.(ICoSeMT). (2020).
3. N.M. Abd-Alghafour, Ghassan Adnan Naeem, **Sabah M Mohammad**, Dependence of V₂O₅ Nanorods Properties on Substrate Type Prepared by Simple Hydrothermal Method.(ICoSeMT). (2020).
4. Nabihah Kasim*, Zainuriah Hassan, Way Foong Lim, **Sabah M. Mohammad**, Hock Jin Quah, Morphological and Structural Properties of Sol-Gel Derived ZnO Thin Films SpinCoated on Different Substrates. (ICoSeMT). (2020).
5. Mundzir Abdullah, Dian Alwani, Zainuri, Suhana, Ibrahim Abdul Razak, **Sabah M. Mohammad**, Third Order Optical Nonlinearity of Linear Fused Ring Dichloro-Substituent Chalcone Isomers. (ICoSeMT). (2020).
6. Hayder Salah Naeem, Naser M. Ahmed, **Sabah M. Mohammad**, M. Al Shafouri, Investigation of Arabic Gum Optical Properties as UV-Blue Light Down Conversion for Light Emitting Diode Application. (ICoSeMT). (2020).
7. **Sabah M. Mohammad**, Z Hassan, and Naser M. Ahmed: "Ultraviolet photodetector of vertically aligned ZnO nanorods synthesized using hydrothermal method on glass substrate". The Regional Fundamental Science Congress 2014, (FSC2014). University Putra Malaysia, 19-20/8/2014.

8. **Sabah M. Mohammad**, Z Hassan, Naser M. Ahmed, Rawnaq A. Talib, Nabeel M. Abd-Alghafour, and A. F. Omar: "Hydrothermal growth and characterization of vertically well-aligned and dense ZnO nanorods on glass and silicon using a simple optimizer system". International Conference on Nano-Electronic Technology Devices and Materials 2015 (ic-net 2015). uitm shah Alam, Selangor, Malaysia 27/2-2/3-2015.
9. **Sabah M. Mohammad**, Z. Hassan and Naser M. Ahmed. "Growth of n- ZnO nanorods on p-GaN using an Aqueous Solution Method". 2nd Meeting of Malaysia Nitrides Research Group (MNRG 2015), Auditorium Murad Mohd Noor, sains@usm, Universiti Sains Malaysia, 6-7/12/2015.
10. N. M. Abd-Alghafour, Naser M. Ahmed, Zai Hassan, **Sabah M. Mohammad**, M. Bououdina. "Growth and characterization of V₂O₅ nanorods deposited by spray pyrolysis at low temperatures." International Conference on Nano-Electronic Technology Devices and Materials 2015 (ic-net 2015), UiTM Shah Alam, Selangor, Malaysia 27/2-2/3-2015.
11. **Sabah M. Mohammad**, Z. Hassan, Naser M. Ahmed, "Near ultra-violet electroluminescence from ZnO Nanorods/p-GaN heterojunction light-emitting diode, 3rd Meeting of Malaysia Nitrides Research Group (MNRG 2016), Auditorium Murad Mohd Noor, sains@usm, Universiti Sains Malaysia, 6-7/12/2016.
12. Rawnaq A. Talib, M. J. Abdullah, and **Sabah M. Mohammad**. "Formation and analysis of ZnO-PAni hexagonal prisms composite prepared by the chemical method." International Conference on Nano-Electronic Technology Devices and Materials 2015 (IC-NET 2015), UiTM Shah Alam, Selangor, Malaysia 27/2-2/3-2015.
13. N. M. Abd-Alghafour, Naser M. Ahmed, Zai Hassan, and **Sabah M. Mohammad**. "Influence of solution deposition rate on properties of V₂O₅ thin films deposited by spray pyrolysis technique." The 2nd International Conference on Functional Materials and Metallurgy (ICOFM 2016), park royal hotel and resort Penang, 28/5/2016.

Teaching Experience

- Physics and Technology of Nanomaterials
- Semiconductor Devices
- Semiconductor physics
- Modern physics
- Optics
- Solid state physics I, II
- Mathematics I, II

Research Interests

- Solid State Physics, Nano-semiconductors
- Nano-technology.
- Light emitting diode (LEDs) devices.

- UV-light enhancement
- UV-VIS - PL spectroscopy.
- UV-VIS – detectors.
- Gas sensors.
- Graphene
- ZnO Nanorods.
- GaN material.
- Porous silicon and Porous GaN, and other materials.
- Photonic Materials and Devices

Technical Skills

- Experience in Microsoft Office (Word, PowerPoint, Excel.....).
- Experience in other software applications such as Origen, Sigma, Edward Max, SketchUp, Viso and Nano-Scope Analysis.

Membership and Awards

- Member, Universiti Sains Malaysia (USM), Alumni.
- Member, Malaysian Solid State Science and Technology Society (MASS)
- Member, Iraqi Society of Physics and Mathematics.
- Member, ARID, Arab Research ID.
- Keynote Speaker (2020). International Scientific Symposium in Physics and E-Learning.
- Awarded the Best Scientific Oral Presentation for Research Paper titled “Near ultra-violet electroluminescence from ZnO Nanorods/p-GaN heterojunction light-emitting diode” at the 3rd Meeting of Malaysia Nitrides Research Group (MNRG 2016).

Academic Referees

Professor Dr. Zainuriah Hassan

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NOTE: Further information and non-online listed publications can be provided as per request.