Asst. Prof. Dr. Mohammed Halool Mohammed Al-Suwaity

Assistant Professor — Dean, College of Applied Medical Sciences, University of Shatrah

University of Shatrah, Al-Shatrah, Dhi Qar, Iraq
E-mail: mohammedhalol@shu.edu.iq | ORCID: 0000-0003-0530-7477 | Scopus Author ID: 57194059635
Google Scholar: scholar.google.com/citations?user=rpYkDagAAAAJ

SPECIALIZATION

Physics — Nanoelectronics; computational and theoretical physics.

EDUCATION

2021	Ph.D. in Physics, College of Science, University of Thi-Qar.
2015	M.Sc. in Physics, Southern Illinois University Carbondale (SIUC), USA. Thesis: *Electronic and Vibrational Properties of Single-Wall Carbon Nanotubes and Boron Nitride Nanotubes in the Presence of Various Impurities*.
2007	B.Sc. in Physics (Laser Applications), University of Thi-Qar.

POSITIONS

Current	Assistant Professor and Dean, College of Applied Medical Sciences, University of Shatrah.
Current	Undergraduate teaching, Department of Medical Physics, College of Applied Medical Sciences, University of Shatrah.
2022 – 2023	Head of the Department of Geology, College of Science, University of Thi-Qar.
2017 – 2021	Department Rapporteur, Department of Geology, College of Science, University of Thi-Qar.
—	Lecturer in Postgraduate Studies, College of Science, University of Thi-Qar.
2008 – 2011	Database Manager and laboratory research assistant (electrical, logic and atomic physics laboratories), College of Science, University of Thi-Qar.

TEACHING

- Undergraduate studies: Department of Medical Physics, College of Applied Medical Sciences, University of Shatrah.
- Postgraduate studies: College of Science, University of Thi-Qar.

EDITORIAL AND REVIEWING WORK

- Editor for Scopus- and Clarivate-indexed journals published by Elsevier and Springer, including Solid State Communications, Physica E and the Chinese Journal of Physics.
- Reviewer of more than 50 papers for international journals and more than 20 for Iraqi journals; examiner of more than 10 theses and dissertations in physics.
- Member of the American Physical Society (APS) and of Honor Society (USA) since 2013.

RESEARCH INTERESTS

- Computational and theoretical physics; density functional theory (DFT) and computational materials science.
- Electronic and vibrational properties of nanomaterials: carbon nanotubes, boron nitride nanotubes and graphene.
- Impurity effects in nanostructures; nanomaterial-based drug delivery.

AWARDS AND HONORS

- Government scholarship for the M.Sc. degree in Physics in the United States.
- Certificate of Excellence from the Office of the Deputy Prime Minister of Iraq for first place among the students of the University of Thi-Qar, 2007.
- Certificate of Excellence from the University of Thi-Qar for first place among 72 students of the Department of Physics, 2007.
- Two Certificates of Excellence from the University of Thi-Qar for database management, 2010 and 2011.

PUBLICATIONS

1. M Mohammed, M Hamid. Computational Study of ZSWCNTs and ZSWBNNTs as a Career Different Anticancer Drug. *Sumer Journal for Pure Science*, 3(2), 2024, 2024.
2. KH Bardan, FN Ajeel, MH Mohammed, AM Khudhair, AB Ahmed. DFT study of adsorption properties of the ammonia on both pristine and Si-doped graphene nanoflakes. *Chemical Physics Impact*, 8, 100561, 2024. doi:10.1016/j.chphi.2024.100561
3. MH Neamah, MH Mohammed. Mos2nts as a novel drug delivery system for oxaliplatin anticancer drug in the presence p and ga impurities in different sites. *Edelweiss Applied Science and Technology*, 8(4), 1077-1088, 2024. doi:10.55214/25768484.v8i4.1483
4. AM Khudhair, AB Ahmed, FN Ajeel, MH Mohammed. Theoretical investigation on the therapeutic applications of C2B and C2O as targeted drug delivery systems for hydroxyurea and 6-thioguanine in cancer treatment. *Nano-Structures & Nano-Objects*, 38, 101135, 2024. doi:10.1016/j.nanoso.2024.101135
5. TA Omeer, MH Mohammed. Effective and controlling on the electronic properties of the graphene nanoflakes in the presents various concentrations of the B, N, and O impurities. *Research Square*, 2023. doi:10.21203/rs.3.rs-2634521/v1
6. MH Mohammed, FN Ajeel, SH Mohammed, AM Khudhair, FH Hanoon. Engineering and controlling the electronic properties of zigzag and armchair boron nitride nanotubes with various concentrations of oxygen impurities. *Chinese Journal of Physics*, 89, 793-800, 2023. doi:10.1016/j.cjph.2023.07.018
7. AM Khudhair, MH Mohammed, FN Ajeel, SH Mohammed. Enhancement the electronic and optical properties of the T- graphene nanosheet in the present various impurities: DFT study. *Chemical Physics Impact*, 7, 100341, 2023. doi:10.1016/j.chphi.2023.100341

8. TA Omeer, MH Mohammed. Tuning the band gap in graphene nanoflakes via various impurities. *Nano-Structures & Nano-Objects*, 35, 101009, 2023. doi:10.1016/j.nanoso.2023.101009
9. AM Khudhair, MH Mohammed, FN Ajeel, SH Mohammed. Enhancement the electronic and optical properties of the graphene nanoflakes in the present S impurities. *Chemical Physics Impact*, 6, 100154, 2022. doi:10.1016/j.chphi.2022.100154
10. A Hayat, M Sohail, J Ali Shah Syed, AG Al-Sehemi, MH Mohammed, ... Recent Advancement of the Current Aspects of g-C3N4 for its Photocatalytic Applications in Sustainable Energy System. *The Chemical Record*, 22(7), e202100310, 2022. doi:10.1002/tcr.202100310
11. MH Mohammed, FH Hanoon. Zinc oxide nanosheet as a career to various anticancer drugs delivery by utilizing DFT method. *Chinese Journal of Physics*, 77, 291-299, 2022. doi:10.1016/j.cjph.2020.12.026
12. MH Mohammed, FH Hanoon. Application of zinc oxide nanosheet in various anticancer drugs delivery: Quantum chemical study. *Inorganic Chemistry Communications*, 127, 108522, 2021. doi:10.1016/j.inoche.2021.108522
13. MH Mohammed, FH Hanoon. Bilayer MSe2 and MS2 (M = Mo, W) as a novel drug delivery system for β-lapachone anticancer drug: Quantum chemical study. *Computational and Theoretical Chemistry*, 1190, 112999, 2020. doi:10.1016/j.comptc.2020.112999
14. M Houmad, O Dakir, M Khuili, MH Mohammed, H Ez-Zahraouy, A El Kenz, ... DFT study of electronic and electrical properties of stana-silicene as a novel 2D nanomaterial. *Optical and Quantum Electronics*, 52(9), 399, 2020. doi:10.1007/s11082-020-02493-4
15. M Houmad, O Dakir, MH Mohammed, M Khuili, A El Kenz, A Benyoussef. Electronic and electrical properties of two single-layer tetragonal silicon carbides. *Chemical Physics Letters*, 754, 137710, 2020. doi:10.1016/j.cplett.2020.137710
16. MH Mohammed, FH Hanoon. Enhancement the physicochemical properties of ZnONS in the presence various concentrations of Ga impurities and difference anticancer drug molecules. *Physica E: Low-dimensional Systems and Nanostructures*, 124, 114384, 2020. doi:10.1016/j.physe.2020.114384
17. MH Mohammed, FH Hanoon. First-principles study on the physical properties for various anticancer drugs using density functional theory (DFT). *Solid State Communications*, 325, 114160, 2020. doi:10.1016/j.ssc.2020.114160
18. MH Mohammed, FH Hanoon. Theoretical prediction of delivery and adsorption of various anticancer drugs into pristine and metal-doped graphene nanosheet. *Chinese Journal of Physics*, 68, 578-595, 2020. doi:10.1016/j.cjph.2020.09.030
19. MH Mohammed, BA Jarullah, FH Hanoon. Using of cellulose with various nanoparticles as chelating factors in nanovaccines: Density functional theory investigations. *Solid State Communications*, 316-317, 113945, 2020. doi:10.1016/j.ssc.2020.113945
20. MH Mohammed, FH Hanoon. Zinc oxide nanosheet as a promising route for carrier 5-fluorouracil anticancer drug in the presence metal impurities: Insights from DFT calculations. *Computational and Theoretical Chemistry*, 1194, 113079, 2020. doi:10.1016/j.comptc.2020.113079
21. FN Ajeel, AM Khudhair, MH Mohammed, KM Mahdi. DFT Investigation of Graphene Nanoribbon As a Potential Nanobiosensor for Tyrosine Amino Acid. *Russian Journal of Physical Chemistry A*, 93(4), 778-785, 2019. doi:10.1134/s0036024419040022
22. FN Ajeel, MH Mohammed, AM Khudhair. Effects of lithium impurities on electronic and optical properties of graphene nanoflakes: A DFT–TDDFT study. *Chinese Journal of Physics*, 58, 109-116, 2019. doi:10.1016/j.cjph.2019.01.009
23. MH Mohammed, AS Al-Asadi, FH Hanoon. Electronic structure and band gap engineering of bilayer graphene nanoflakes in the presence of nitrogen, boron and boron nitride impurities. *Superlattices and Microstructures*, 129, 14-19, 2019. doi:10.1016/j.spmi.2019.03.012

24. AS Al-Asadi, QMA Hassan, AF Abdulkader, MH Mohammed, H Bakr, ... Formation of graphene nanosheets/epoxy resin composite and study its structural, morphological and nonlinear optical properties. *Optical Materials*, 89, 460-467, 2019. doi:10.1016/j.optmat.2019.01.078
25. FN Ajeel, MH Mohammed, AM Khudhair. SWCNT as a Model Nanosensor for Associated Petroleum Gas Molecules: Via DFT/B3LYP Investigations. *Russian Journal of Physical Chemistry B*, 13(1), 196-204, 2019. doi:10.1134/s1990793119010020
26. AM Khudhair, FN Ajeel, MH Mohammed. Theoretical (DFT and TDDFT) insights into the effect of polycyclic aromatic hydrocarbons on Monascus pigments and its implication as a photosensitizer for dye-sensitized solar cells. *Microelectronic Engineering*, 212, 21-26, 2019. doi:10.1016/j.mee.2019.04.003
27. MH Mohammed, FN Ajeel, AM Khudhair. Analysis the electronic properties of the zigzag and armchair single wall boron nitride nanotubes with single Li impurity in the various sites. *Journal of Electron Spectroscopy and Related Phenomena*, 228, 20-24, 2018. doi:10.1016/j.elspec.2018.08.005
28. M Houmad, MH Mohammed, R Masrour, A El Kenz, A Benyoussef. Electronic and electrical properties of siligraphene (g-SiC3) in the presence of several strains. *Journal of Physics and Chemistry of Solids*, 127, 231-237, 2018. doi:10.1016/j.jpcs.2018.12.016
29. MH Mohammed. Electronic and thermoelectric properties of zigzag and armchair boron nitride nanotubes in the presence of C island. *Chinese Journal of Physics*, 56(4), 1622-1632, 2018. doi:10.1016/j.cjph.2018.05.017
30. F Ajeel, MH Mohammed, AM Khudhair. Electronic, Thermochemistry and Vibrational Properties for Single-walled Carbon Nanotubes. *Nanoscience & Nanotechnology-Asia*, 8(2), 233-239, 2018. doi:10.2174/2210681207011704191454 28
31. FN Ajeel, MH Mohammed, AM Khudhair. Energy bandgap engineering of graphene nanoribbon by doping phosphorous impurities to create nano-heterostructures: A DFT study. *Physica E: Low-dimensional Systems and Nanostructures*, 105, 105-115, 2018. doi:10.1016/j.physe.2018.09.006
32. AM Khudhair, FN Ajeel, MH Mohammed. Engineering and design of simple models from dye-sensitive of solar cells and photovoltaic cells applications: Theoretical study. *Chemical Physics Letters*, 713, 166-171, 2018. doi:10.1016/j.cplett.2018.10.014
33. JMALM Fouad N. Ajeel, Lafy F. Al-Badry, Mohammed H. Mohammed. Role of para, meta, and ortho configurations for nanojunctions in determining the quantum transport: application to nanoelectronic devices. *Nanotechnology and Advanced Materials Research Centre*, 2018.
34. MH Mohammed, AS Al-Asadi, FH Hanoon. Semi-metallic bilayer MS2 (M=W, Mo) induced by Boron, Carbon, and Nitrogen impurities. *Solid State Communications*, 282, 28-32, 2018. doi:10.1016/j.ssc.2018.07.011
35. AM Khudhair, FN Ajeel, MH Mohammed. Theoretical Study of the Electronic and Optical Properties to Design Dye-Sensitivity for Using in Solar Cell Device. *Russian Journal of Physical Chemistry B*, 12(4), 645-650, 2018. doi:10.1134/s1990793118040097
36. MH Mohammed, FN Ajeel, AM Khudhair. Adsorption of gas molecules on graphene nanoflakes and its implication as a gas nanosensor by DFT investigations. *Chinese Journal of Physics*, 55(4), 1576-1582, 2017. doi:10.1016/j.cjph.2017.05.013
37. MH Mohammed. Controlling the electronic properties of the graphene nanoflakes by BN impurities. *Physica E: Low-dimensional Systems and Nanostructures*, 95, 86-93, 2017. doi:10.1016/j.physe.2017.09.014
38. AM Khudhair, FN Ajeel, MH Mohammed. DFT Investigations for sensing capability of a single-walled Carbon nanotube for adsorptions H2, N2, O2 and CO molecules. *International journal of nanodimension.*, 8(1), 82-88, 2017. doi:10.22034/ijnd.2017.24379
39. MH Mohammed. Designing and engineering electronic band gap of graphene nanosheet by P dopants. *Solid State Communications*, 258, 11-16, 2017. doi:10.1016/j.ssc.2017.04.011
40. RAAA Fouad N. Ajeel, Mohammed H. Mohammed. Topological Insulators in Bi2Se3 Family Nanostructured Thin Films: Study Topological Nature and Surface states. *Journal of Thi-Qar University*, 12(1), 40-49, 2017.

41. FN Ajeel, MH Mohammed, AM Khudhair. Tuning the electronic properties of the fullerene C20 cage via silicon impurities. *Russian Journal of Physical Chemistry B*, 11(5), 850-858, 2017. doi:10.1134/s1990793117050025
42. MH Al-Abboodi, FN Ajeel, AM Khudhair. Influence of oxygen impurities on the electronic properties of graphene nanoflakes. *Physica E: Low-dimensional Systems and Nanostructures*, 88, 1-5, 2016. doi:10.1016/j.physe.2016.11.023
43. HI Sirikumara, E Putz, M Al-Abboodi, T Jayasekera. Symmetry induced semimetal-semiconductor transition in doped graphene. *Scientific Reports*, 6(1), 19115, 2016. doi:10.1038/srep19115
44. MH H Mohammed, H Naser, SH Mohammed, FH Hanoon, M Saleh. C80 Fullerene as a Novel Drug Delivery System For Various Anticancer Drugs into Pristine and Al, Si and Ni Impurities: Dft Studies.

THESIS AND CONFERENCE PRESENTATIONS

1. M. H. Al-Abboodi, J. Bohorquez, E. Putz, H. Sirikumara, T. Jayasekera. Electronic Properties of Graphene and Single-Wall Carbon Nanotubes in the Presence of Hexagonal BN Islands. *American Physical Society (APS) March Meeting*, 2015.
2. Mohammed Halool Mohammed Al-Abboodi. Electronic and Vibrational Properties of Single-Wall Carbon Nanotubes and Boron Nitride Nanotubes in the Presence of Various Impurities. *M.Sc. thesis, Southern Illinois University Carbondale*, 2015.
3. E. Putz, J. Bohorquez, H. Sirikumara, M. Al-Abboodi, T. Jayasekera. Symmetry Breaking of Graphene in the Presence of B and N Impurities. *American Physical Society (APS) March Meeting*, 2014.

SKILLS AND LANGUAGES

Mathematica, LaTeX, Linux, Microsoft Office, Adobe Photoshop. Arabic (native), English (advanced).