

Ihab Obaidat

Professor of Physics

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Education

1. Ph.D., Physics. May 1998, **University of Illinois**.
Chicago, Illinois, USA
(Thesis title: *Magnetic Studies of Vortices in YBaCuO Crystals*).
 2. M.S., Physics. August 1994, **Northeastern Illinois University**.
Chicago, Illinois, USA.
 3. B.S., Physics. June 1990, **Yarmouk University**.
Jordan.
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Scholarships

1. 1992-1994, Northeastern Illinois University, Chicago.
 2. 1986-1990, Ministry of High-Education, Jordan.
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Physics Organizations

1. Member of American Physical Society.
 2. Member of the American Institute of Physics.
 3. Member of Jordanian Scientists and Technologists Abroad (JoSTA) network.
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Awards

1. “*Khalifa Award for Education for the Academic Year 2014-2015 (8th Cycle)*”. Category: Higher education within UAE. Distinguished University Professor in the Field of Research.
2. “*Abdul Hameed Shoman Award for Young Arab Researchers in Physics and Geology for the Year 2010*”. The award was granted by “*Abdul Hameed Shoman Foundation*”.

3. **“Chancellor’s Innovation Award for the sixth cycle-2020/2021”**. In the area of Renewable Energy.
4. **College Award for Excellence in Scholarship**. May 21, 2009. This award was granted by the College of Science at United Arab Emirates University for the academic year 2008-2009.
5. **Research Project Award**. April 16, 2009. This award was granted by the Research Affairs Sector at United Arab Emirates University for the academic year 2008-2009. The project title: "*Origins of the bandgap bowing in compound semiconductor common-cation ternary alloys*".
6. **Research Project Award**. April 25, 2007. This award was granted by the Research Affairs Sector at United Arab Emirates University for the academic year 2006-2007. The project title: "*Molecular Dynamics simulations on the Peak Effect of the Critical Current Density in High-Temperature Superconductors*".
7. **Research Project Award**. April 24, 2006. This award was granted by the Research Affairs Sector at United Arab Emirates University for the academic year 2005-2006. The project title: "*Vortex Lattice Dynamics in Superconductor Systems of Periodic Pinning Arrays*".
8. **Ranked first in the Faculty of Science Teaching Recognition Award** for the 2010 academic year.
9. **Top Physics Student of the Year Award**. Oct-1987. This award was granted by the College of Science at Yarmouk University, Jordan.
10. **Falak Tayeb Award** in technology innovation in (2013). The project title was “*Smart nanoparticles for cancer treatment*”. This award was granted to my student Zainab Karam under my supervision.
11. **Best poster award** in the “*The First International Workshop on Materials Science and Modeling*”. This award was granted to my student Zainab Karam under my supervision. The workshop was held in Dubai during May 25-29, 2014. The poster titled “*Smart nanoparticles for cancer treatment*”.

Professional Experience

- Aug. 2023-Present: Professor, Department of Physics, University of Sharjah, Sharjah, United Arab Emirates.
- Sep. 2011 – Jul. 2023: Professor, Department of Physics, United Arab Emirates University, Al-Ain, United Arab Emirates.
- Sep. 2006 - Aug. 2011: Associate Professor, Department of Physics, United Arab Emirates University, Al-Ain, United Arab Emirates.
- Sep. 2003 - Aug. 2006: Assistant Professor, Department of Physics, United Arab Emirates University, Al-Ain, United Arab Emirates.
- Mar. 2002 - Aug. 2003: Assistant Professor, Department of Physics, Al Al-Bayt University, Mafraq, Jordan.

- Nov. 1999 - Mar. 2002: Assistant Professor, Department of Electronics Engineering Technology, DeVry University, Chicago, Illinois, USA.
- Jul. 1999 - Oct. 1999: Adjunct faculty, department of physics, Northwestern University, Evanston, Illinois, USA.
- Jan. 1999 - May. 1999: Adjunct faculty Department of Science and Mathematics. McHenry County College, Crystal Lake, Illinois, USA.
- May. 1998 - Jan. 1999: Adjunct faculty, Department of Science, Robert Morris College, Chicago, Illinois, USA.

Research Interests

Condensed Matter Physics:

1. Magnetic properties of nanoparticles and nanostructures.
2. Supercapacitors.
3. Solar cells.
4. Graphene oxide composites for water purification and desalination.
5. Magnetocaloric and magnetoresistive properties of Heusler alloys.
6. Electric and magnetic properties of high-temperature superconductors.
7. Electric and magnetic properties of ferroelectric materials.

Physics Education:

1. Enhancing students' attitudes towards learning physics.
2. Enhancing the understanding of basic concepts in introductory physics courses.

Scholar Indices

h-index: 37

i10-index: 84

Citations: 6824

Editorial Board Membership

1. I served as a **Guest Editor** for a Special Issue in *Renewable Energy* journal, Elsevier. Volume 56, Pages 1-136 (August 2013).
2. I served as a **member of the International Advisory Committee** for the *International Conference on Advanced Materials (ICAM2015)*.
3. I served as a **member of the International Advisory Committee** for the *International Conference on Advanced Materials (ICAM2017)*.
4. I served as a **member of the International Advisory Committee** for the *1st International Conference on Current Nanotechnology and its Applications (ICCNA2018)*.

5. I served as a **member of the International Advisory Committee** for the *International Conference on Advanced Materials - ICAM 2023*.
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Reviewer in International Journals

I served as a **reviewer in several International Journals**.

1. Journal of Power Sources, Elsevier.
 2. Materials Science in Semiconductor Processing, Elsevier.
 3. Chemical Engineering Journal. Elsevier BV, Netherlands.
 4. Scientific Reports. Nature Publishing Group, UK.
 5. Electrochimica Acta. Elsevier Ltd. UK.
 6. ACS Applied Nano Materials. American Chemical Society, US.
 7. Nanomaterials, MDPI, Switzerland.
 8. International Journal of Nanomedicine. Dove Press, US.
 9. Journal Alloys and Compounds. Elsevier BV, Netherlands.
 10. Journal of Materials Science: Materials in Electronics. Springer New York, Netherlands.
 11. Crystal Research and Technology. John Wiley and Sons Inc. Germany.
 12. European Journal of Physics D. IOP Publishing Ltd. UK.
 13. Nanomedicine. Future Medicine Ltd. UK.
 14. Ionics. Institute for Ionics, Germany.
 15. Optik - International Journal for Light and Electron Optics. Urban und Fischer Verlag Jena, Netherlands.
 16. Physica C. Elsevier, Netherlands.
 17. Journal of Magnetism and Magnetic Materials. Elsevier, Netherlands.
 18. Journal of Physics and Chemistry of Solids. Elsevier Ltd., UK.
 19. Materials Science and Engineering: B. Elsevier Ltd., UK.
 20. Renewable Energy Journal. Elsevier BV, UK.
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Patents

➤ I was granted **6 US Patents**:

1. **Patent No US10490323B2**. Date of Patent: Nov-26-2019. Title of the patent: “*Method of synthesizing magnetite/maghemite core/shell nanoparticles*”. Inventors: **Ihab M. Obaidat** and Chiranjib Nayek.
2. **Patent No US10854395B1**. Date of Patent: Dec. 1, 2020. Title of the patent: “*Asymmetric supercapacitor with hierarchical electrodes*”. Inventors: **Ihab M. Obaidat**, Hee-Je Kim, Chandu V. V. Muralee Gopi, and Sangaraju Sambasivam.
3. **Patent No US10916380B1**. Date of Patent: Feb. 09, 2021. Title of the patent: “*Quantum dot-sensitized solar cell and method of making the same*”. Inventors: **Ihab M. Obaidat**, Hee-Je Kim, Chandu V. V. Muralee Gopi, and Sangaraju Sambasivam.
4. **Patent No US10984959B1**. Date of Patent: Apr. 20, 2021. Title of the patent: “*Quantum dot-sensitized solar cell and method of making the same*”. Inventors: **Ihab M. Obaidat**, and Sangaraju Sambasivam.

5. **Patent No US11152160B1**. Date of Patent: Oct. 19, 2021. Title of the patent: “*High-rate hybrid supercapacitor*”. Inventors: **Ihab M. Obaidat**, Hee-Je Kim, Chandu V. V. Muralee Gopi, and Sangaraju Sambasivam.
6. **Patent No US11183343B1**. Date of Patent: Nov. 21, 2021. Title of the patent: “*Composite material for supercapacitor electrodes*”. Inventors: **Ihab M. Obaidat**, Hee-Je Kim, Chandu V. V. Muralee Gopi, and Sangaraju Sambasivam.

Authored Books

1. **Ihab M. Obaidat**: “*Conceptual Introductory Physics: A Tour Guide for Students*”. Published by Modern Book World Publishers, Jordan, 2009. **ISBN: 978-9957-70-099-7**.

Chapters in Research Books

1. **I. M. Obaidat**, B. A. Albiss, and M.K. Hasan (Qaseer): “*Understanding the Roles of Heavy Ion and Gamma-Irradiations on the Magnetic and Transport Properties of Superconductors*”. In “*Superconducting Magnets and Superconductivity: Research, Technology and Applications*”. Editors: Henry Tovar and Jonathon Fortier. Nova Science Publishers Inc. 2009. **ISBN: 978-1-60741-017-1**. (30 Pages). Same as No.48 in the publications list.
2. N. Tit, and **I. M. Obaidat**: “*Rules Governing the Confinements in Semiconductor Quantum Wells*”. In “*Advances in Condensed Matter Physics*”. Editor: Ali Reshak. Research Signpost Publishers Inc. 2009. **ISBN: 978-81-308-0336-4**. (28 Pages). Same as No.51 in the publications list.
3. B. Issa, and **I. M. Obaidat**: “*Magnetic Nanoparticles as MRI Contrast Agents*”. In “*Magnetic Resonance Imaging*”. In Magnetic Resonance Imaging, 1-16, 2019, IntechOpen, London, United Kingdom. DOI: 10.5772/intechopen.84649.
4. **Ihab M. Obaidat**, Venkatesha Narayanaswamy, Sulaiman Alaabed, Sangaraju Sambasivam, Chandu V. V. Muralee Gopi: “*Principles of Magnetic Hyperthermia: A Focus on Using Multifunctional Hybrid Magnetic Nanoparticles*”. In “*Magnetic Nanoparticles*”. Editor: Evgeny Katz. MDPI publications, 2020. **ISBN 978-3-03928-268-5**. (40 Pages).

Selected Publications in International Peer-Reviewed Journals

1. **I. M. Obaidat**, H. Goeckner and J. S. Kouvel: “*Vortex pinning in a rotated $YBa_2Cu_3O_{7-\delta}$ crystal*”. Physica C **291**, 8-16 (1997).
2. **I. M. Obaidat**, S. J. Park, H. Safar and J. S. Kouvel: “*Vortex bending in a tilted $YBa_2Cu_3O_{7-\delta}$ crystal*”. Phys. Rev. B. **56**, R5774-R5777 (1997).
3. **I. M. Obaidat**, S. J. Park and J. S. Kouvel: “*Vortex behavior in a rotated $YBa_2Cu_3O_{7-\delta}$ polycrystal*”. Physica C **308**, 185-190 (1998).
4. Y. Haung, G. Friedman, **I. M. Obaidat** and J. Kouvel: “*Identification of the switching field function in vector hysteresis models*”. J. Appl. Phys. **87**, 4777-4779 (2000).

5. **I. M. Obaidat**, J. S. Kouvel, Y. Huang and G. Friedman: “*Stoner–Wohlfarth model applied to ferromagnetic particle aggregates rotated in fixed magnetic fields*”. *J. Magn. Magn. Mater.* **223**, 88-96 (2001).
6. H. P. Geockner, **I. M. Obaidat**, M. K. Hasan and J. S. Kouvel: “*Transverse field effects on the remanent magnetization of a ferromagnetic particles and a type-II superconductor*”. *Physica B.* **321**, 234-240 (2002).
7. **I. M. Obaidat**, U. Al Khawaja and M. Benkraouda: “*The Effect Temperature and Pinning Density on the Critical Current of a Superconductor with a Square Periodic Array of Pinning Sites*”. *Supercond. Sci. Technol.* **18**, 1380-1384 (2005).
8. **I. M. Obaidat** and B. A. Albiss: “ *γ -Irradiation Dose Effect on the Critical Current Density in a $Bi_{1.6}Pb_{0.4}Sr_2Ca_2Cu_3O_{10}$ Polycrystal*”. *Supercond. Sci. Technol.* **19**, 151-154 (2006).
9. **I. M. Obaidat**, U. Al Khawaja, M. Benkraouda, and N. Salmeen: “*The behavior of the critical current density below and above the first matching field in Superconductor with Periodic Square Arrays of Pinning Sites*”. *Phys. Lett. A* **359**, 321-325 (2006).
10. **I. M. Obaidat** and N. Qamhieh: “*The Role of the Atomic Structure on the Si/SiO₂ Interface Strains*”. *J. Optoelectron. Adv. Mater.* **9**, 3268-3270 (2007).
11. **I. M. Obaidat** and B. A. Albiss: “*Correlation between the Residual Resistivity Ratio and the Power-Law of the Normal-State Resistivity in MgB_2* ”. *Cryst. Res. Technol.* **43**, 83-86 (2008).
12. N. Tit and **I. M. Obaidat**: “*Charge Confinements in CdSe-ZnSe Symmetric Double-Quantum Wells*”. *J. Phys: Condens. Matter.* **20**, 165205 (10pp) (2008).
13. B. A. Albiss, M. Gharaibeh, **I. M. Obaidat**, N. Al-Rawashdeh, R. Oweis, N. Hamdi and M. K. Hasan (Qaseer): “*Magnetotransport and structural properties of superconducting BPSCCO thick film on MgO substrate*”. *Phys. Stat. Sol. a.* **205**, 1851-1854 (2008).
14. **I. M. Obaidat** and E. Malkawi: “*The Grasp of Physics Concepts of Motion: Identifying Particular Patterns in the Students' Thinking at UAEU*”. *International Journal for the Scholarship of Teaching & Learning (IJ-SoTL)* **3**, 1 (16pp) (2009).
15. Y. Akin, **I. M. Obaidat**, B. Issa, and Y. Haik: “ *$Ni_{1-x}Cr_x$ Alloy for Self Controlled Magnetic Hyperthermia*”. *Cryst. Res. Technol.* **44**, 386-390 (2009).
16. **I. M. Obaidat**, Y. Haik, V. Mohite, B. Issa, and N. Tit: “*Peculiar Magnetic Properties of MnZnGdFeO Nanoparticles*”. *Adv. Sci. Lett.* **2**, 60-64 (2009).
17. **I. M. Obaidat** and N. Tit: “*Quantum-confinement versus strain effects in the Zn(Cd)S(Se) family of superlattices*”. *Microelectron. J.* **40**, 527-529 (2009).

18. N. Tit, **I. M. Obaidat**, and H. Alawadhi: "*Absence of the Bowing Character in the Common-Anion II-VI Ternary Alloys*". J. Alloy. Compd. **481**, 340-344 (2009).
19. B. A. Albiss, **I. M. Obaidat**: "*Applications of YBCO-Coated Conductors: a focus on the chemical solution deposition method*". J. Mater. Chem. **20**, 1836-1845 (2010).
20. B. A. Albiss, **I. M. Obaidat**, M. Gharaibeh, H. Ghamlouche, and S. M. Obeidat: "*Impact of addition of magnetic nanoparticles on vortex pinning and microstructure properties of Bi-Sr-Ca-Cu-O superconductor*". Solid State Commun. **150**, 1542-1547 (2010).
21. **I. M. Obaidat**, B. Issa, and Y. Haik: "*The Role of Aggregation of Ferrite Nanoparticle on their Magnetic Properties*". J. Nanosci. Nanotech. **11**, 3882-3888 (2011).
22. B. Issa, S. Qadri, **I. M. Obaidat**, R. W. Bowtell, and Y. Haik: "*PEG Coating Reduces NMR Relaxivity of $Mn_{0.5}Zn_{0.5}Gd_{0.02}Fe_{1.98}O_4$ Hyperthermia Nanoparticles*". J. Magn. Reson. Imaging, **34**, 1192-1198 (2011).
23. B. Issa, **I. M. Obaidat**, B. A. Albiss, and Y. Haik: "*Magnetic Nanoparticles: Surface Effects and Properties Related to Biomedicine Applications*". Int. J. Mol. Sci. **14**, 21266-21305 (2013).
24. B. Issa, **I. M. Obaidat**, R. H. Hejasee, S. M. Qadri and Y. Haik: "*NMR Relaxation in Systems with Magnetic Nanoparticles: A Temperature Study*". J. Magn. Reson. Imaging, **39**, 648-655 (2014).
25. **I. M. Obaidat**, B. Issa, and Y. Haik: "*Magnetic Properties of Magnetic Nanoparticles for Efficient Hyperthermia*". Nanomaterials **5**, 63-89 (2015).
26. B. A. Albiss, M. I. Al-Widyan, and **I. M. Obaidat**: "*Influence of loadings of single-walled carbon nanotubes on the performance of ZnO nanorods-based dye-sensitized solar cells*". Ceramics International **42**, 3563-3568 (2016).
27. S. Khashan, S. Dagher, N. Tit, A. Alazzam, **I. M. Obaidat**, "*Novel Method for Synthesis of Fe_3O_4/TiO_2 Core/Shell Nanoparticles*". Surface and Coatings Technology, **322**, 92-98 (2017).
28. C. Nayek, K. Manna, G. Bhattacharjee, P. Murugavel, and **I. M. Obaidat**: "*Investigating size- and temperature-dependent coercivity and saturation magnetization in PEG coated Fe_3O_4 nanoparticles*". Magnetochemistry **3**, 19(1-15) (2017).
29. M. K. Ray, B. Maji, **I. M. Obaidat**, and S. Banerjee: "*Anomalous magnetoresistive behavior in $Ni_{44}Co_2Mn_{43}In_{11}$ alloy*". AIP Advances **7**, 085005(1-7) (2017).
30. **I. M. Obaidat**, Chiranjib Nayek, Kaustuv Manna, Gaurab Bhattacharya, Imaddin A. Al-Omari, and Abbasher Gismelseed: "*Investigating exchange bias and coercivity in $Fe_3O_4/\gamma-Fe_2O_3$ core/shell nanoparticles of fixed core diameter and variable shell thicknesses*". Nanomaterials **7**, 415(1-17) (2017).

31. **I. M. Obaidat**, Chiranjib Nayek, Kaustuv Manna: “*Investigating the role of shell thickness and field cooling on saturation magnetization and its temperature dependence in $Fe_3O_4/\gamma-Fe_2O_3$ core/shell nanoparticles*”. *Appl. Sci.* **7**, 1269(1-14) (2017).
32. C. Nayek, M. K. Ray, A. Pal, **I. M. Obaidat**, and P. Murugavel: “*Magnetocaloric effect in $(La_{0.7}Sr_{0.3}MnO_3)_{1-x}(BaTiO_3)_x$ solid solution spin glass system*”. *J. Mater. Sci.* **53**, 2405-2412 (2018).
33. C. Nayek, **I. M. Obaidat**, and P. Murugavel: “*Effect of rare-earth doping on structural, and electrical properties of $BiFeO_3$ submicron particles*”. *Sci. Adv. Mater.* **10**, 24-30 (2018).
34. C. Nayek, **I. M. Obaidat**, B. A. Albiss, and Y. Haik: “*Investigating of negative magnetization in aggregates of $Mn_{0.5}Zn_{0.5}Gd_xFe_{(2-x)}O_4$ ferrite nanoparticles*”. *Nanosci. and Nanotechnol. Lett.* **10**, 1451-1457 (2018).
35. C. Nayek, M-Ali AL-Akhras, V. Narayanaswamy, A. Khaleel, Imaddin A. Al-Omari, A. Rusydi, and **I. M. Obaidat**: “*Investigating the role of shell thickness and applied field on the magnetic anisotropy and temperature dependence of coercivity in $Fe_3O_4/\gamma-Fe_2O_3$ core/shell nanoparticles*”. *Mater. Express* **9**, 123-132 (2019).
36. A.S. Kamzin, **I. M. Obaidat**, A.A.Valiullin, V.G.Semenov, I. A. Al-Omari, C. Nayek: “*Mossbauer study of the core/shell type $Fe_3O_4/\gamma-Fe_2O_3$ nanoparticle structure*”. *Technical Physics Letters* **45**, 426-429 (2019).
37. Hyun-Ho Joo, Chandu V. V. Muralee Gopi, Rajangam Vinodh, Hee-Je Kim, Sangaraju Sambasivam, **Ihab M. Obaidat**: “*Facile synthesis of flexible and binder-free dandelion flower-like $CuNiO_2$ nanostructures as advanced electrode material for high-performance supercapacitors*”. *Journal of Energy Storage* **26**, 100914 (7 pages) (2019).
38. Chandu V. V. Muralee Gopi, Rajangam Vinodh, Sangaraju Sambasivam, **Ihab M. Obaidat**, Reddi Mohan Naidu Kalla, Hee-Je Kim: “*One-pot synthesis of copper oxide-cobalt oxide core-shell nanocactus-like heterostructures as binder-free electrode materials for high-rate hybrid supercapacitors*”. *Materials Today Energy* **14**, (8 pages) 100358 (2019).
39. Sangaraju Sambasivam, Chandu V. V. Muralee Gopi, Hee-Je Kim, **Ihab M. Obaidat**: “*Improved light harvesting and suppressed charge recombination by introduction of nanograss-like SnO_2 interlayer for efficient CdS quantum dot sensitized solar cells*”. *RSC Adv.* **9**, 38047-38054 (2019).
40. Chandu V. V. Muralee Gopi, Rajangam Vinodh, Sangaraju Sambasivam, **Ihab M. Obaidat**, Saurabh Singh, Hee-Je Kim: “ *$Co_9S_8-Ni_3S_2/CuMn_2O_4-NiMn_2O_4$ and $MnFe_2O_4-ZnFe_2O_4/graphene$ as binder-free cathode and anode materials for high energy density supercapacitors*”. *Chemical Engineering Journal* **381**, 1226-1240 (2020).
41. Sangaraju Sambasivam, Chandu V. V. Muralee Gopi, **Ihab M. Obaidat**: “*Effect of erbium content on the structural, morphological, and optical properties of spray deposited nanocrystalline SnO_2 thin films*”. *Optik - International Journal for Light and Electron Optics* **202**, 163596 (6 pages) (2020).

42. Sang-Hyo Kim, Rajangam Vinodh, Chandu V. V. Muralee Gopi, Venkata Guru Raghavendra Kummara, Sangaraju Sambasivam, **Ihab M. Obaidat**, Hee-Je Kim: “*Novel Porous Carbon Material Derived from Hypercross-linked Polymer of p-Xylene for Supercapacitors Electrode*”. *Materials Letters* **263**, 127222 (5 pages) (2020).
43. Chandu V. V. Muralee Gopi, Sangaraju Sambasivam, Rajangam Vinodh, Hee-Je Kim, **Ihab M. Obaidat**: “*Nanostructured Ni-doped CuS thin film as an efficient counter electrode material for high-performance quantum dot-sensitized solar cells*”. *Journal of Materials Science: Materials in Electronics* **31**, 975-982 (2020).
44. Hee Je Kim, T. N. V. Krishna, Kamran Zeb, R. Vinoth, Chandu V V Muralee Gopi, Sangaraju Sambasivam, K.V.G Raghavendra, **Ihab M. Obaidat**: “*A comprehensive review of Li-ion battery materials and their recycling techniques*”. *Electronics* **9**, 1161 (44 pages) (2020).
45. A.S. Kamzin, **I. M. Obaidat**, A.A.Valiullin, V.G.Semenov, I. A. Al-Omari: “*The Composition and Magnetic Structure of Fe₃O₄/γ-Fe₂O₃ Core-Shell Nanocomposites at 300 K and 80 K: Mössbauer Study (Part I)*”. *Physics of the Solid State* **62**, 1933-1943 (2020).
46. Yedluri Anil Kumar, Sangaraju Sambasivam, Shamim Ahmed Hira, Kamran Zeb, Waqar Uddin, TNV Krishna, Kulurumotlakatla Dasha Kumar, **Ihab M Obaidat**, Hee-Je Kim: “*Boosting the energy density of highly efficient flexible hybrid supercapacitors via selective integration of hierarchical nanostructured energy materials*”. *Electrochimica Acta* **364**, 137318 (2020).
47. Young-Seok Lee, Yedluri Anil Kumar, Sangaraju Sambasivam, Shamim Ahmed Hira, Kamran Zeb, Waqar Uddin, Kulurumotlakatla Dasha Kumar, **Ihab M. Obaidat**, Hee-Je Kim, Sungshin Kim: “*CoCu₂O₄ nanoflowers architecture as an electrode material for battery type supercapacitor with improved electrochemical performance*”. *Nano-Structures & Nano-Objects* **24**, 100618 (2020).
48. Sangaraju Sambasivam, Chandu V.V. Muralee Gopi, Hammad Mueen Arbi, Venkatesha Narayanaswamy, Aleksandr S. Kamzin, Pardha Saradhi Maram, **Ihab M. Obaidat**: “*Investigation of optical and magnetic properties of Mn-doped tetragonal ZrO₂ nanocrystals*”. *Journal of Solid State Chemistry* **294**, 121872 (2021).
49. Venkatesha Narayanaswamy, Sambasivam Sangaraju, Alam Saj, Sulaiman Alaabed, Bashar Issa, Imad A. Al-Omari, and **Ihab M. Obaidat**: “*Role of magnetite nanoparticles size and concentration on hyperthermia under various field frequencies and strengths*”. *Molecules* **26**, 796 (14pages) (2021).
50. Venkatesha Narayanaswamy, Imaddin A. Al-Omari, Aleksandr. S. Kamzin, Bashar Issa, Hemant Kumar, Ambresh Mallya, Sulaiman Alaabed, Hafsa Khorshid, Sangaraju Sambasivam, **Ihab M. Obaidat**: “*Specific absorption rate dependency on the Co²⁺ distribution and magnetic properties in Co_xMn_{1-x}Fe₂O₄ nanoparticles*”. *Nanomaterials* **11**, 1231(21 pages) (2021).
51. Venkatesha Narayanaswamy, Imaddin A. Al-Omari, Aleksandr. S. Kamzin, Chandu V. V. Muralee Gopi, Abbas Khaleel, Sulaiman Alaabed, Bashar Issa, **Ihab M. Obaidat**: “*Exchange Bias, and Coercivity Investigations in Hematite Nanoparticles*”. *AIMS Materials Science* **9**, 71-84 (2022).

52. Venkatesha Narayanaswamy, Imaddin A. Al-Omari, Aleksandr. S. Kamzin, Bashar Issa, and **Ihab M. Obaidat**: “*Tailoring Interfacial Exchange Anisotropy in Hard-Soft Core-Shell Ferrite Nanoparticles for Magnetic Hyperthermia Applications*”. *Nanomaterials* **12**, 262(21 Pages) (2022).
53. Venkatesha Narayanaswamy, Imaddin A. Al-Omari, Alexander Kamzin, Hafsa Khurshid, Abbas Khaleel, Bashar Issa, **Ihab M. Obaidat**: “*Coercivity and exchange bias in Ti-doped maghemite nanoparticles*”. *Magnetochemistry* **8**, 165(12 Pages) (2022).
54. Venkatesha Narayanaswamy, Jayalakshmi Jagal, Hafsa Khurshid, Imaddin A. Al-Omari, Mohamed Haider, Alexander Kamzin, **Ihab M. Obaidat**, and Bashar Issa: “*Hyperthermia of Magnetic Soft-Soft Core-Shell Ferrite Nanoparticles*”. *International Journal of Molecular Sciences* **23**, 14825(25 Pages) (2022).
55. Sajid Sajid, Salem Alzahmi, Dong Wei, Imen Ben Salem, Jongee Park, **Ihab M. Obaidat**: “*Diethanolamine modified perovskite-substrate interface for realizing efficient ESLs-free PSCs*”. *Nanomaterials* **13**, 250(14 Pages) (2023).
56. Yedluri Anil Kumar, Ganesh Koyyada, Dasha Kumar Kulurumotlakatla, Jae Hong Kim, Md Moniruzzaman, Salem Alzahmi, **Ihab M. Obaidat**: “*In situ grown mesoporous structure of Fe-dopant@NiCoO_x@NF nanoneedles as efficient supercapacitor electrode material*”. *Nanomaterials* **13**, 292(13 Pages) (2023).
57. Sajid Sajid, Salem Alzahmi, Imen Ben Salem, Jongee Park, **Ihab M. Obaidat**: “*Lead-free perovskite homojunction-based HTM-free perovskite solar cells: Theoretical and experimental viewpoints*”. *Nanomaterials* **13**, 983(17 Pages) (2023).
58. Sajid Sajid, Salem Alzahmi, Imen Ben Salem, Jongee Park, **Ihab M. Obaidat**: “*Inorganic hole transport materials in perovskite solar cells are catching up*”. *Materials Today Energy* **37**, 101378 (2023).
59. Sajid Sajid, Salem Alzahmi, Imen Ben Salem, Nouar Tabet, Yousef Haik, **Ihab M. Obaidat**: “*Desirable Candidates for High-Performance Lead-free Organic-Inorganic Halide Perovskite Solar Cells, to Materials for Renewable and Sustainable Energy*”. *Materials for Renewable and Sustainable Energy* s40243-024-00255-w (2024).
60. Venkatesha Narayanaswamy, Bilal Rah, Imaddin A. Al-Omari, Alexander Kamzin, Hafsa Khurshid, Jibrán Sualeh Muhammad, **Ihab M. Obaidat**, and Bashar Issa: “*Evaluation of Antiproliferative properties of CoMnZn-Fe₂O₄ Ferrite Nanoparticles in Colorectal Cancer Cells*”. *Pharmaceuticals* **17**, 327 (2024).
61. Sajid Sajid, Salem Alzahmi, Nouar Tabet, Yousef Haik, **Ihab M. Obaidat**: “*Fabricating planar perovskite solar cells through greener approach*”. *Nanomaterials* **14**, 594 (2024).
62. Chandu V. V. Muralee Gopi, Salem Alzahmi, Venkatesha Narayanaswamy, KVG Raghavendra, Bashar Issa, **Ihab M. Obaidat**: “*A Review on Electrode Materials of Supercapacitors Used in*

Wearable Bioelectronics and Implantable Biomedical Applications". Materials Horizon **12**, 4092-4132 (2025).

63. Venkatesha Narayanaswamy, Chandu V. V. Muralee Gopi, Salem Alzahmi, Mohammad Y. Al-Haik, Saleh T. Mahmoud, Bashar Issa, Yousef Haik, **Ihab M. Obaidat**: "*Hierarchical In(OH)3/GO Battery-Type Electroactive Material on Nickel Foam for High-Performance Supercapacitors*". Journal of Power Sources **653**, 237739 (2025).
64. Venkatesha Narayanaswamy, Jayalakshmi Jagal, Imaddin A. Al-Omari, Mohamed Haider, Chandu V. V. Muralee Gopi, Ihab M. Obaidat, and Bashar Issa: "*Chitosan-PEG Functionalized Cube Shaped MnFe₂O₄ Nanoparticles for Curcumin Delivery and Magnetic Hyperthermia Against MDA MB 231 Cancer Cells*". Materials Chemistry and Physics **345**, 131235 (2025).

Conferences and Workshops

I (or a member of my research group) participated in over 100 conferences and workshops.

Selected Research Projects

- 1- "*Synthesis and Optimization of Smart Multifunctional Magnetic Nanoparticles for Biomedical Applications*".
Funding agency: University of Sharjah.
- 2- "*Biomedical and Molecular Imaging Research*".
Funding agency: University of Sharjah.
- 3- "*Investigating new spin correlated-plasmon in novel Mott-like insulating highly oriented single-crystalline gold quantum dots*".
Funding agency: UAEU
- 4- "*Development of SnO₂/Co-Ni double hydroxide (core/shell) nanostructured towards enhanced performance in supercapacitor application*".
Funding agency: UAEU
- 5- "*Developing highly efficient and long-term durable HTM-free perovskite solar cells*".
UAEU-ZU.

Courses Taught

Undergraduate Level Courses:

- 1- **Conceptual Physics** (PHYS 101)
- 2- **Man and Science** (GEST 231)
- 3- **General Physics I** (PHYS 105)
- 4- **General Physics I for IT** (PHYS 1052)
- 5- **General Physics II** (PHYS 110)
- 6- **Physics and Engineering Applications I** (PHYS 1110)

- 7- **Physics and Engineering Applications II** (PHYS 1120)
- 8- **Electronics** (PHYS 230)
- 9- **Modern Physics I** (PHYS 250)
- 10- **Classical Mechanics** (PHYS 262)
- 11- **Statistical Physics** (PHYS 312)
- 12- **Electromagnetic Theory** (PHYS 336)
- 13- **Modern Physics II** (PHYS 350)
- 14- **Quantum Mechanics** (PHYS 355)
- 15- **Solid State Physics** (PHYS 470)
- 16- **Research Project** (PHYS 494)
- 17- **Internship** (PHYS 500)

Graduate Level Courses:

- 1- **Semiconductors** (PHYS 550) Jordan.
- 2- **Superconductors** (MTSE 655)
- 3- **Electrodynamics** (PHYS 530)
- 4- **Selected topics** (PHYS 798): Supercapacitors.

Contributions towards Graduate Studies

1. I Served as a PhD. supervisor for the student (Hammad Arbi) at the department of physics at UAEU. He defended his PhD thesis on Apr-18-2023. The title of his thesis is: “*METAL OXIDE BASED MATERIALS FOR HIGH PERFORMANCE SUPERCAPACITORS*”.
2. I served as a master’s degree supervisor a student in the Physics Department at Al al-Bayt University, Mafraq, Jordan, (2002-2003). The title of the thesis is “*The Effect of γ -irradiation, temperature, and magnetic field on the behavior of the critical current density in $TlBa_2Ca_2Cu_2O_x$ polycrystals*”. The student Khalid Khazali successfully defended his thesis on Jan-2003.
3. I served as a master’s degree co-supervisor for a student in the Material Science and Engineering program at United Arab Emirates University, (2004-2006). The title of the thesis is “*Numerical Simulation Study of the Effect of Localized Defects on the Temperature Dependence of the Critical Current Density in High Temperature Superconductors*”. The student Salama Al Neaimi successfully defended her thesis in Dec-2006.
4. I served as a master’s degree co-supervisor for a student (Maitha Al-Otaiba) in the Environmental Science Program at UAEU. Duration of supervision: 2008-2010.
5. I served as a master’s degree co-supervisor for a student in the Department of Physics at Jordan University of Science and Technology, Jordan (2021-2022). The title of the thesis is “*Molecular Simulation of 6-Gingerol Loading on Graphene and Graphene oxide for Drug Delivery Applications*”. The student Basmah Ouhdat successfully defended her thesis on Feb-03-2022.
6. I am serving as an external examiner for a PhD. Thesis defense by the student Turkiya Al-Shahumi from Sultan Qaboos University. On May-17-2023.

7. I served on the MSc defense committee for the MSc student name: Yahia Adeeb Hamdan (UAEU Physics Department). Defense was held on Apr-18-2019. The project title: “*Simulation of T2 MRI Relaxation Enhancement by Magnetic Nanoparticles*”.
8. I served on the MSc defense committee for the MSc student name: H. El-Hankari. The project title: “*Variable Thresholding in Susceptibility Mapping: Improved Peak Profiles and Reduced Overshoots*”. Defense was held on Feb-10-2015.
9. I served on the PhD. comprehensive exam committee at the physics department, UAEU. Spring 2019.
1. I served 2 times as a Thesis Committee Member for master’s degree in physics for two students at Al al-Bayt University, Mafraq, Jordan, (2002-2003).
2. I served as a coordinator for the Graduate Studies committee at the Physics Department at UAE University. I contributed significantly to developing both the master’s degree and Ph.D. programs.
3. I contributed significantly to the proposal for the Ph. D. degree in physics at United Arab Emirates University, 2008. I have proposed several courses with their course description.
4. I contributed significantly to the proposal for the M.Sc. degree in physics at United Arab Emirates University, 2008-present. I have proposed several courses with their course description.
5. I served on the committee responsible for initiating a master’s degree program in physics at United Arab Emirates University, 2005-2007.
6. I taught several graduate courses:
 - Superconductors.
 - Physics of Semiconductors and Heterostructures.
 - Electrodynamics.
 - Special topics: Supercapacitors.

Committees since 2004

Regional Level

1. **SESAME** (Synchrotron-light for Experimental Science and Applications in the Middle East) User. SESAME is a synchrotron light source under construction in Jordan. **It will be the Middle East's first major international research center.**
2. I am a member of the **International Advisory Committee** for the “*International Conference on Advanced Materials: ICAM2015*”. The conference was held in Jordan University of Science and Technology, Jordan. Apr.27-29, 2015.
3. I served as a **member of the International Advisory Committee** for the *International Conference on Advanced Materials (ICAM2017)*. The conference was held in Jordan University of Science and Technology, Jordan. Jul-10-13, 2017.

4. I served as a **member of the International Advisory Committee** for the *1st International Conference on Current Nanotechnology and its Applications (ICCNA2018)*. The conference was held at Jordan University of Science and Technology, Jordan. Apr.10-12, 2018.

Committees at the University Level

1. **Member:** United Arab Emirates Collaboration with Advanced Technology Investment Company (ATIC-UAEU). (1 yr).
2. **Member:** Group E of the “*United Arab Emirates 2012 Strategic Planning*”.
3. **Member:** Faculty of Science and Faculty of Education Committee for developing New B.S. degree. (One semester).
4. **Member:** Technical Organizing Committee for UN/ESA/NASA Workshop on the International Heliophysical Year IHY 2007. Abu Dhabi, UAE, Nov-20-23, 2007.
5. **Member:** The 2nd Physics Olympiad for high school students at UAE. Jan, 2006, Al Ain, UAEU, in cooperation with Ministry of Education at UAE.
6. **Member:** University wide competition. Organized by the College of Science.
7. **Member:** The 2nd International Conference on Nanotechnology (ICN08). Abu Dhabi National Exhibition Center (ADNEC), Abu-Dhabi, UAE. Nov. 17-20, 2008.
8. **Member:** The International Conference on Renewable Energy: Generation and Applications (ICREGA10), Al Ain, UAE, Mar. 7-10, 2010.
9. **Member:** The Third International Conference on Nanotechnology (ICN11). UAEU, Nov. 27-30, 2011.
10. **Member:** The International Conference on Renewable Energy: Generation and Applications (ICREGA11), Al Ain, UAE, Mar. 7-10, 2010.

Committees at the College Level

1. **Member:** College of Science Graduate Studies Committee. (1 yr).
2. **Member:** College of Science Course Development Committee. (1 yr).
3. **Member:** College of Science Innovative Teaching and Research Awards Committee. (1 yr).
4. **Member:** College of Science Peer Evaluation for Teaching Committee. (2 yrs).
5. **Member:** College of Science Committee for Instructors and TA's in the college. (1 yr).
6. **Member:** College of Science Committee for setting criteria for Teaching Evaluation. (1 yr).

Committees at the Department Level

1. **Coordinator/Member:** Department of Physics Research and Graduate Studies Committee. (1 yr /6 yrs).
2. **Coordinator:** Department of Physics Budget Committee. (1 yr).
3. **Coordinator:** Department of Physics Committee for Application Screening in Semiconductor Theory. (1 yr).
4. **Coordinator:** Department of Physics Research Committee. (1 yr).
5. **Coordinator of subcommittee for ABET accreditation.** (2 yrs).
6. **Member:** Department of Physics Research Labs Committee. (2 yrs).
7. **Member:** Department of Physics Cultural and Social Activities Committee. (1 yr).
8. **Member:** Department of Physics Academic Affairs Committee. (4 yrs).
9. **Member:** Department of Physics Practical Training Committee (2yrs).
10. **Member:** Department of Physics Students' Activities Committee. (1 yr).
11. **Member:** Department of Physics Intermediate Lab IV Committee. (1 yr).

12. **Member: Department of Physics** Course Development Committee. (3 yrs).
 13. **Coordinator: Department of Physics** Committee for Application Screening in Condensed Matter Physics. (3 yrs).
 14. **Member: Department of Physics** Annual Report Committee. (3 yrs).
 15. **Member: Department of Physics** Computers and IT Committee. (3 yrs).
 16. **Member: Department of Physics** Teaching Labs Committee. (1 yr).
 17. **Member: Department of Physics** Students Advising Committee. (3 yrs).
 18. **Member: Department of Physics** Equipment's Committee. (1 yr).
 19. **Member: Department of Physics** Establishing Physics Laboratory for General Physics I for IT course. (1 yr).
 20. **Member: Department of Physics** Committee for unifying General Physics courses for science and engineering students. (1 yr).
 21. **Member: Department of Physics** Committee for iPad courses design. (1 yr).
 22. **Member: Department of Physics Committee for** Physics Program Review: Guidelines for Self-Study Report (1 yr).
 23. **Member: Department of Physics** Committee for updating and enhancing the Electronics course (1 yr).
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