Curriculum Vitae

Mahmoud Abdelfatah

Personal information

Full name	**Mahmoud Mohamed Saad Abdelfatah**
Nationality	**Egyptian**
Date of birth	**March 14th, 1983**
Marital status	**Married (٢ child)**
E-mail	mahmoud.abdelfatah@sci.kfs.edu.eg m_s_abdelfatah@yahoo.com
Scops website	https://www.scopus.com/authid/detail.uri?authorId=56304687900 **(h-index: 7)**
Google Scholar website	https://scholar.google.com/citations?user=9m_LYikAAAAJ&hl=de **(h-index: 7)**
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Education

2016	**Ph.D. degree in Physics with a thesis topic of "Fabrication and Characterization of Low Cost Solar Cells based on Earth Abundant Materials for Sustainable Photovoltaics", Institute of Semiconductor Technology, Braunschweig University of Technology, Germany.**
2014	**Preliminary Ph.D. courses in Physics, Faculty of Science, Kafrelsheikh University, Egypt.**
2011	**M.Sc. degree in Physics with a thesis topic of "Transport Properties Study of Nano Porous Materials", Kafrelsheikh University, Egypt.**
2009	**Complement Studies in Physics, Faculty of Science, Tanta University, Egypt**
2006	**Special Diploma in Physics, Faculty of Education, Kafrelsheikh University, Egypt.**
2005	**General Diploma in Physics, Faculty of Education, Kafrelsheikh University, Egypt.**
2004	**B.Sc. in Physics and Chemistry, Faculty of Education, Kafrelsheikh Branch, Tanta University, Egypt.**

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Employment

2016 – till now	**Lecturer at Physics Department, Faculty of Science, Kafrelsheikh University, Egypt.**
2014–2016	**Scientific staff in the Institute of Semiconductor Technology (IHT), Braunschweig University of Technology, Germany.**
2011-2014	**Assistant lecturer at Physics Department, Faculty of Science, Kafrelsheikh University, Egypt.**
2009-2011	**Scientific researcher at Physics Department, Faculty of Science, Kafrelsheikh University, Egypt.**
2005-2009	**Scientific researcher at Physics and Chemistry Department, Faculty of Education, Kafrelsheikh University, Egypt.**

Research Interests

- **Synthesis of semiconductors oxides, quantum dots, quantum wells, nanowires, nanoporous, nanoparticles, nanorods, thin films, 2D materials and nanomaterials (i.e., Ag nanoparticles, TiO_2 nanorods and nanoparticles, ZnO nanorods, nanowires and nanoparticles, Cu_2O thin films and nanoparticles, Fe_3O_4 quantum dots and CdS quantum dots and GO nanosheet).**
- **Semiconductor technology experiences on chemical growth methods [(i.e., chemical bath deposition, electrochemical deposition, hydrothermal and successive ionic layer adsorption and reaction (SILAR)], and physical methods [(i.e., sputtering, thermal evaporation, atomic layer deposition (ALD) and molecular organic vapor deposition (MOCVD)].**
- **Experiences on photolithography and working in clean room environment.**
- **Experiences on electrical and optical characterization methods of semiconductors (i.e., UV, FTIR, SEM, TEM, particle size, Electroluminescene, Photoluminescence, Solar simulator, I-V, LCR, Raman, C-V, C-f, and EQE measurements).**
- **Fabrication and characterization of devices for photovoltaic, LEDs, sensors, water splitting, photoelectrochemical, water treatment, and photocatalytic applications.**
- **Optoelectronic devices simulation using SCAPs and others programs.**
- **Preparation of Polymer materials using Resorcinol and formaldehyde in the form of nano pourous matterials and in the form of nano composite materials.**
- **Fabrication of nano optoelectronic devices based on Polymers.**

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Publications and Conferences

1. **M. Abdelfatah, W. Ismail and A. El-Shaer , Seed layer-free growth of submicron ZnO rod arrays employing low cost methods and their photoelectrochemical biosensing, *in preparation.***
2. **M. Abdelfatah, W. Ismail and A. El-Shaer, Light emitting diode based on electrodeposited Cu_2O / polymers heterojunction and, *in preparation*.**
3. **Mahmoud Abdelfatah, M. I. EL-Henawey, Walid Ismail, H. Yahay, A. H. Oraby, and Abdelhamid El-Shaer, Enhancement of structural, morphological, optical, and photoelectrochemical properties of ZnO nanorods through Al ions doing for optoelectronic applications, *submitted* to Alloys and compounds (2020).**
4. **M. Abdelfatah , A. El-Shaer, and W. Ismail, Comparison of the effect of solution concentration on Structural and Optical Properties of annealed CdO Thin Films synthesized by Electrodeposition Technique on two different Substrate, in preparation.**
5. **Nagi M. El-Shafai, , Mohamed R. Eraky, Mohamed S. Ramadan, Ibrahim M. El-Mehasseb and M. Abdelfatah, Investigation the photocatalytic activity, Electrochemical, and Dielectric of hybrid nanocomposite (GO@ZnO.TiO_2.Ag) for water treatment and energy storage, *submitted* to Applied Surface Science (2020).**
6. **Walid Ismail, A. El-Shaer, M. Abdelfatah, Phase transition of $Cd(OH)_2$ and physical properties of CdO microstructures prepared by precipitation method for optoelectronic applications, *accepted* in IOP Conference Series: Materials Science and Engineering (2020).**
7. **M. Abdelfatah , A. El-Shaer, and W. Ismail, Simulation of CuO/ZnO heterojunction for photovoltaic applications, *accepted* in IOP Conference Series: Materials Science and Engineering (2020).**
8. **Nagi M. El-Shafai, Rencai Ji, M. Abdelfatah, Mohamed A. Hamad, A. W. Kandeal, Ibrahim M. El-Mehasseb, A. El-Shaer, W. Ismail Mohamed S. Ramadan, Swellam W. Sharshir, A novel nanomaterial combination (GO@CuO.γ-Al_2O_3): Investigation of nanofluids thermal conductivity and electrical properties, *accepted* in Alloys and compounds (2020).**
9. **Nagi M. El-Shafai, M. Abdelfatah, Ibrahim M. El-Mehasseb, Mohamed E. El-Khouly, Mohamed S. Ramadan, Mamdouh S. Masoud, and Maged A. El-Kemary, Improvement of Photocurrent and Electrochemical properties of Copper oxide nanorods quantum dots via (p-n) type heterojunction as a novel hybrid composite on graphene oxide surface for**

water treatment and solar cell applications, *submitted and Under review in journal of Applied Catalysis B: Environmental* (2020).

10. Abdelhamid El-Shaer, Mahmoud Abdelfatah, M. I. EL-Henawey, Walid Ismail, M. Kubas, Mabrok Bakry, and A. H. Oraby, Structural and Optical Properties of ZnO Nanorod Arrays under Different Growth Temperature, International Journal of Nano and Material Sciences, 2020, 9(1): 1-8.
11. Walid Ismail, Abdelhamid El-Shaer, Nagi M. El-Shafai, and M. Abdelfatah, Impact of substrate type on the surface and properties of electrodeposited Cu_2O nanostructure films as an absorber layer for solar cell applications, Materials Science in Semiconductor Processing, Volume 120, December 2020, 105335. (doi.org/10.1016/j.mssp.2020.105335)
12. Nagi M. El-Shafai, M Shokra, M. Abdelfatah, Ibrahim M. El-Mehassebc, Abdelhamid El-Shaer, Mohamed S. Ramadan, and Maged A. El-Kemarya, Electrochemical property, Antioxidant activities, water treatment and solar cell applications of Titanium dioxide - Zinc oxide nanoparticles based on Graphene oxide nanosheet, Materials Science & Engineering B, Volume 259, September 2020, 114596. (10.1016/j.mseb.2020.114596)
13. M. Abdelfatah, W. Ismail, Nagi M. El-Shafai and A. El-Shaer, Effect of thickness, band gap, and carrier concentration on the basic parameters of Cu2O nanostructures Photovoltaics: Numerical simulation study, submitted revised version of manuscript to Materials Technology: Advanced Performance Materials, (2020) 1-9. (doi.org/10.1080/10667857.2020.1793092)
14. Nagi M. El-Shafai, M. Abdelfatah, Mohamed E. El-Khouly, Ibrahim M. El-Mehassebc, Abdelhamid El-Shaer, Mohamed S. Ramadan, Maged A. El-Kemarya and Mamdouh S. Masoud, Magnetite oxide Nano spherical quantum dots decorated graphene oxide Nano sheet (GO@Fe3O4): Electrochemical study, Removal of heavy metals, pesticide and solar cell application, Applied Surface Science, Volume 506, 15 March 2020, 144896. (doi.org/10.1016/j.apsusc.2019.144896s)
15. Abdelhamid El-Shaer , M. Abdelfatah, Kamal R. Mahmoud, Sanaa Momay, M.R. Eraky, Correlation between Photoluminescence and Positron annihilation lifetime spectroscopy to characterize defects in calcined MgO nanoparticles as a first step to explain antibacterial activity , Journal of Alloys and Compounds, Volume 817, 15 March 2020, 152799. (doi.org/10.1016/j.jallcom.2019.152799)
16. A. El-Shaer, W. Ismail, and M. Abdelfatah, Towards low cost fabrication of inorganic white light emitting diode based on electrodeposited Cu_2O thin film/TiO_2 nanorods

heterojunction, Materials Research Bulletin, Volume 116, August 2019, Pages 111-116. (doi :10.1016/j.materresbull.2019.04.005)

17. M. Abdelfatah, W. Ismail and A. El-Shaer, Low cost inorganic white light emitting diode based on submicron ZnO rod arrays and electrodeposited Cu_2O thin film, Materials Science in Semiconductor Processing, 81 (2018), 44-47. (doi : 10.1016/j.mssp.2018.03.004)
18. Abdelhamid El-Shaer, M. Abdelfatah, Ali Basuni, and Mohsen Mosaad, Effect of KOH Molarity and Annealing Temperature on ZnO Nanostructures Properties, Chinese Journal of Physics, Volume 56, Issue 3, June 2018, Pages 1001-1009. (doi :10.1016/j.cjph.2018.03.015)
19. S. Attia, M. Abdelfatah, M. Mossad, Characterization of pure and composite resorcinol formaldehyde aerogels doped with silver IOP Conf. Series: Journal of Physics: Conf. Series 869 (2017) 012036. (doi :10.1088/1742-6596/869/1/012036)
20. S. Attia, M. Abdelfatah, M. Mossad, Conduction mechanism and dielectric properties of pure and composite resorcinol formaldehyde aerogels doped with silver, IOP Conf. Series: Journal of Physics: Conf. Series 869 (2017) 012035. (doi :10.1088/1742-6596/869/1/012035)
21. M. Abdelfatah, A. El-Shaer, One step to fabricate vertical submicron ZnO rod arrays by hydrothermal method without seed layer for optoelectronic devices, Materials Letters, 210 (2018) 366-369. (doi: 10.1016/j.matlet.2017.09.064)
22. M. Abdelfatah, J. Ledig, A. El-Shaer, A. Sharafeev, P. Lemmens, M.M. Mosaad, A. Waag, A. Bakin, Effect of potentiostatic and galvanostatic electrodeposition modes on the basic parameters of solar cells based on Cu_2O thin films, ECS Journal of Solid State Science and Technology 5 (2016) Q183-Q187. (doi: 10.1149/2.0191606jss)
23. L. Caccamo, G. Cocco, G. Martín, H. Zhou, S. Fuendling, A. Gad, M.S. Mohajerani, M. Abdelfatah, S. Estradé, F. Peiró, W. Dziony, H. Bremers, A. Hangleiter, L. Mayrhofer, G. Lilienkamp, M. Moseler, W. Daum, A. Waag, Insights into interfacial changes and photoelectrochemical stability of $In_xGa_{1-x}N$ (0001) photoanode surfaces in liquid environments, ACS Applied Materials & Interfaces 8 (2016) 8232-8238. (doi: 10.1021/acsami.5b12583)
24. M. Abdelfatah, J. Ledig, A. El-Shaer, A. Wagner, V. Marin-Borras, A. Sharafeev, P. Lemmens, M. M. Mosaad, A. Waag, A. Bakin, Fabrication and characterization of low cost Cu_2O/ZnO:Al solar cells for sustainable photovoltaics with earth abundant materials, Solar Energy Materials and Solar Cells 145 (2016) 454-461.

(doi:10.1016/j.solmat.2015.11.015)

25. M. Abdelfatah, J. Ledig, A. El-Shaer, A. Wagner, A. Sharafeev, P. Lemmens, M.M. Mosaad, A. Waag, A. Bakin, Fabrication and characterization of flexible solar cell from electrodeposited Cu_2O thin film on plastic substrate, Solar Energy 122 (2015) 1193-1198. (doi:10.1016/j.solener.2015.11.002)

26. A. Wagner, M. Stahl, J. Ledig, A. Winter, M. Abdelfatah, A. Turchanin, P.Lemmens, A. Waag, A. Bakin, All-oxide solar cells: atomic layer deposition of oxide buffer layers at the ZnO/Cu_2O interface, E-MRS 2014 Fall Meeting, Warsaw, Poland September 15-18 (2014).

Research Projects

- Band Gap Engineering of ZnO nanostructures as windows layer for solar cell applications, Project ID: 6692), Funded by ASTR on Sep. 2020 (Role ; PI).
- Theoretical investigation of some nanomaterials for optoelectronic applications, Project ID: 6689), accepted preproposal, Funded by ASTR on Sep. 2020 (Role ;Co-PI).
- Low Cost and Large-Scale Fabrication of Inorganic White Light Emitting Diode Based on Nanostructures Semiconductor Oxides, (Project ID: 37212), accepted preproposal, will be Funded by STDF (Role ;PI).
- Efficiency Enhancement of Low Cost Solar Cells based on Earth Abundant Materials (Project ID: 33389), Funded by STDF on June 2019 (Role ;PI).
- Synthesis and characterization of nanomaterials for photovoltaic applications (Project ID: KFSU-3-13-03), Funded by Kafrelsheikh University from 2013 to 2016 (Role; Researcher).
- Low- cost Nano-Wire Solar Cell and White Light Emitting Diode based on Zinc Oxide-Polymer hybrid Nano-structures (NANO-SOLED) (Project ID: 1473), Funded by STDF from 2011 to 2016 (Role; Researcher).

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Teaching Experience

- **Teach the following physics courses:**

Electricity and Magnetism	**Quantum Physics 1**
Modern Physics	**Properties of Matter**
Solid State Physics 1	**Geometrical Optics**
Solid State Physics 2	**Solar Cells**
Physical Optics	**Material Science (1)**
Electronics (1)	**Electronics (2)**
Atomic Physics (1)	**Atomic Physics (2)**
Renewable Energies	**Solar Energy**
AC Electric Circuits	**Digital Electronics**
Thin Films	**Radiation Physics**
Advanced Optics	**Polymers**
Semiconductor Nanotechnology	**Characterization Techniques**

- **Teaching several practical physics courses (2005-2014).**
- **Supervisor of Bachelor, Master and Ph.D students.**

Conferences, Workshops and Training Course in Teaching and Professional

- **Participated in the following Training courses:**

Effective Presentations skills	**Quality Standards in Teaching**
Communication skills in education	**Effective teaching**
University Lecturer Preparation	**Skills of Thinking**
Strategically planning for Higher Institute	**Ethics of profession**

of Education	
Students evaluation and exam systems	**International Scientific Publication**
Scientific Research Methods	**Competitive research projects**
Credit Hours System	**University administration**

- **Equipment's specifications, selection, and getting price quotation.**
- **Participated in establishment the under-graduation labs.**
- **Attended the 34 th Eg-MRS International Conference, 29-30 Aug. 2020, Egypt.**
- **Participated in Workshop of "Production and transfer of knowledge of nanoscience in the field of solar energy", 27.10.2016 at National Research Center, Egypt.**
- **Attended "Scientific Conference of Water and Energy " 02.03.2017, Damanhour, Egypt.**
- **Attended "1st Castle Conference of Advanced Sciences " 03.2017, Kafrelsheikh, Egypt.**
- **Participated in Workshop of " The Modern Knowledge Cycle" 05.03.2017, Kafrelsheikh, Egypt.**
- **Reviewer for ISI journals such as Solar Energy, Journal of Alloys and Compounds, Applied Surface Science, Materials Science in Semiconductor Processing, and Electrochemistry society.**

Awards and Honors

- **Post doc at Fraunhofer Institute for Surface Engineering and Thin Films IST, Braunschweig, Germany.**
- **PhD scholarship award, from Egyptian Government, 2014-2016 (Germany).**
- **Scientific Publication award, Kafrelsheikh University, Egypt.**

Quality Assurance and Accreditation Committee

- **Coordinator of Physics Department, Faculty of Science, Kafrelsheikh University, for Quality Assurance and Accreditation Committee.**
- **Description of all courses that were taught by me.**
- **Participated on specification of Physics and Nanoscience and Nanotechnology programs.**

- **Director of the Evaluation and Measurement Unit at Faculty of Science, Kafrelsheikh University.**
- **Member of the Quality Assurance and Accreditation Committee Board of at Faculty of Science, Kafrelsheikh University.**

Skills and Interests

Languages	**English (very good), German (good), and Arabic (native language)**
Skills and software	**Special Programs in the Computer Training and Internet Training for Postgraduate Students, office programs used internet and sites, Microsoft-Office-Suite, International Computer Driving License (ICDL), Origin, Endnote, Mendeley, and 3D sketches**
Interests	**Reading, football, computer, music and nature.**