

Dr. Faryal Idrees
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OBJECTIVE

To enhance my skills through passionate, challenging, career oriented and motivational tasks by working in a dynamic environment.

PERSONAL PROFILE

D/O	Muhammad Idrees
D.O.B	24-09-87
Religion	Islam
Nationality	Pakistani
Marital Status	Single
NIC #	35202-9980822-2
City	Lahore, Pakistan
Domicile	Lahore/Punjab/Pakistan

ACADEMIC CAREER

- Research Scholar [2011-2015]
School of Material Sciences and Engineering
Beijing Institute of Technology
- M.Phil in *High Energy Physics* [2009-2011]
Grade: A+
CGPA: 4.0 out of 4.0
University of the Punjab, Lahore.
- B.Sc (Hons.) in *Computational Physics* [2005-2009]
University of the Punjab, Lahore.
Grade: A
CGPA: 3.91 out of 4.0
Position: 3rd

WORK EXPERIENCE

- Post-Doctoral awarded by Alexander [2017-2019]
Von Humboldt, Germany
Institut für Technische Chemie
Leibniz Universität Hannover
- Assistant Professor [2015-2019]
Department of Physics
The University of Lahore

TAUGHT SUBJECTS

Taught subjects to B.Sc(Hons), M.Sc, M.Phil and Ph.D are:

- Heat and Thermodynamics
- Introduction to Computer
- Solar Energy
- Projects
- Introduction to Materials Science
- Renewable Energy Resources

RESEARCH INTERESTS

- Energy Related materials: Nb₂O₅, VO₂, Carbon based materials
- Supercapacitors (Symmetric and Asymmetric)
- Li ion batteries
- Photocatalyst
- Hydrogen storage
- Solar Water Splitting and Hydrogen Production
- Electrochemistry
- Laser Photolysis

AWARDS & Activities

- PSF-NSFC Joint Proposal: “Design and Construction of Photocatalytic Materials for Efficient Hydrogen Generation”, Working as PI, The grant of Rs.11,246,724 was approved. Current Status: In Progress
- Pakistan Higher Education Commission (HEC)-Approved Supervisor
- International Organizer of International Conference on Recent Advances in Physics, 7-9th April, 2018, Department of Physics, The University of Lahore
- Conference Secretary of International Conference on Materials Science and Nano Technology, 25th September 2016, Department of Physics, The University of Lahore
- “Facile and Template Free Synthesis of Niobium Based Semiconductors: Applications for Energy Storage and Photocatalysis”, National Natural Science Foundation of China, Research Fund for the Doctoral Program of Higher Education of China, September 2013-July 2015, Successfully executed.
- Project Outcomes: Developed novel and facile hydrothermal synthesis routes for Nb₂O₅ and Nb₃O₇F and studied their photocatalytic, hydrogen storage and energy storage/conversion properties with 4 SCI publications.
- “Development of Materials Synthesis Lab”, The University of Lahore, March 2016, Approved and In Process
- Project Outcomes: Department of Physics would be able to synthesize materials by using hydrothermal, CVD and Microwave-Assisted techniques. Also can measure supercapacitor properties by using electrochemical work station.
- Best student Award awarded by Beijing Institute of Technology in 2013 and 2014
- 4th position holder among all sessions of B.Sc (Hons) and MPhil of Centre for High Energy Physics, Pakistan
- <http://phys.org/news/2015-03-silk-green-material-next-generation-batteries.html>
- <http://www.sciencedaily.com/releases/2015/03/150311124431.htm>
- <https://www.acs.org/content/acs/en/pressroom/presspacs/2015/acs-presspac-march-11-2015/silk-could-be-new-green-material-for-next-generation-batteries.html>

SKILLS

- Good Communication
- Good Interpersonal Skill
- Enjoy challenging tasks
- Independent research project design and conduction
- XRD, SEM, UV, PL, FTIR, TEM analysis, GC-MS Analysis, Electrochemistry

COMPUTER SKILLS

- Latex
- Mathematica (5 & 6)
- C # , C++
- Origin 8
- X'Pert High Score

RESEARCH ACTIVITIES

- International Organizer of International Conference on Recent Advances in Physics, 7-9th April, 2018, Department of Physics, The University of Lahore
- Conference Secretary of International Conference on Materials Science and Nano Technology, 25th September 2016, Department of Physics, The University of Lahore
- Presented paper in *BOND21-Joint International Conference on Nanoscience, Engineering, and Management, Malaysia*, 19-21 August 2013, paper published in proceedings.
- Presented paper in *The 10th Postgraduate Forum, School of Materials Science and Engineering, BIT*, May 28, 2013, paper published in proceedings.
- Participated in *THE 9th ALL PAKISTAN MOBILINK GIKI SCIENCE FAIR* held on 22-24 February, 2008.
- Participated in *SOFTEC '08* held at FAST-NU, Lahore Campus on 30-31 August, 2008.
- *International Scientific Spring - 2011*, March 01-04, 2011.

RESEARCH PROJECTS

- **“Facile and Template Free Synthesis of Niobium Based Semiconductors: Applications for Energy Storage and Photocatalysis”**, National Natural Science Foundation of China, Research Fund for the Doctoral Program of Higher Education of China, September 2013-July 2015, Successfully executed.
Project Outcomes: Developed novel and facile hydrothermal synthesis routes for Nb₂O₅ and Nb₃O₇F and studied their photocatalytic, hydrogen storage and energy storage/conversion properties with 4 SCI publications.
- **“Development of Materials Synthesis Lab”**, The University of Lahore, March 2016, Approved and In Process
Project Outcomes: Department of Physics would be able to synthesize materials by using hydrothermal, CVD and Microwave-Assisted techniques. Also can measure supercapacitor properties by using electrochemical work station.
- **PSF-NSFC Joint Proposal: “Design and Construction of Photocatalytic Materials for Efficient Hydrogen Generation”**, Working as PI, In Progress

Ph.D/M.Phil Research Students

- **“Synthesis and Characterization of Undoped and Doped Metal Oxide Multilayer Thin Films”**, Muhammad Iftikhar Khan, PhD (Physics), Supervisors: Dr. Faryal Idrees and Dr. Khurshid Aslam Bhatti.
- **Template free microwave-assisted synthesis of NiO with controlled morphology, growth habit and supercapacitor measurements**, Fayyaz Ahmad (2013-2016), Supervisors: Dr. Faryal Idrees, Farwa Idrees.
- **“Nanostructure Fabrication of Iron Oxide for Photocatalysis”**, Muhammad Qasim Farooq MPhil (2017-2019), Supervisors: Dr. Faryal Idrees and Dr. M. Tahir.
- **ROLE of TITANIUM DIOXIDE NANOPARTICLES (TiO₂-NPs) to REMOVE CADMIUM (Cd) From WASTEWATER**, Waseem Gill (2016-2018), Supervisors: Dr. Faryal Idrees, Atif Arshad

REFREES

Prof. Detlef Bahnemann (Post-Doctoral Host) bahnemann@iftc.uni-hannover.de

Prof. Cao Chuanbao (Ph.D Supervisor) cbcao@bit.edu.cn

Dr. Nasir Mahmood (Ex-Colleague) nasir.mahmood@rmit.edu.au

PUBLICATIONS

- SCI Publications: 48, Citations: 2725, h-index: 24, i-10 index 36

1. Idrees, F., Dillert, R., Bahnemann, D., F. K. Butt, M. Tahir (2019). **"In-Situ Synthesis of Nb₂O₅/g-C₃N₄ Heterostructures as Highly Efficient Photocatalysts for Molecular H₂ Evolution under Solar Illumination."** *Catalysts* 9(2):169.
2. J Hou, J Tang, K Feng, F Idrees, M Tahir, X Sun, X Wang (2019). **"The chemical precipitation synthesis of nanorose-shaped Bi₄O₅I₂ with highly visible light photocatalytic performance."** *Materials Letters* 252, 106-109
3. J Hou*, T Jiang, R Wei, F Idrees*, DW Bahnemann (2019). **Ultrathin-layer structure of BiOI microspheres decorated on N-doped biochar with efficient photocatalytic activity,** *Frontiers in Chemistry* 7: 378.
4. T Jiang, J Jin, J Hou, M Tahir, F Idrees (2019). **Bi₄O₅I₂/nitrogen-doped hierarchical carbon (NHC) composites with tremella-like structure for high photocatalytic performance,** *Chemosphere*, 229:426-433.
5. Jianhua Hou, Jian Tang, Ke Feng, Faryal Idrees, Muhammad Tahir, Xianbin Sun, Xiaozhi Wang, **The chemical precipitation synthesis of nanorose-shaped Bi₄O₅I₂ with highly visible light photocatalytic performance,** *Materials Letters* 252:106-109.
6. Idrees, F., C. Cao, R. Ahmed, F. K. Butt, S. Butt, M. Tahir, M. Tanveer, I. Aslam and Z. Ali (2015). **"Novel nano-flowers of Nb₂O₅ by template free synthesis and enhanced photocatalytic response under visible light."** *Science of Advanced Materials* 7(7): 1298-1303.
7. Idrees, F., C. Cao, F. K. Butt, M. Tahir, I. Shakir, M. Rizwan, I. Aslam, M. Tanveer and Z. Ali (2014). **"Synthesis of novel hollow microflowers (NHMF) of Nb₃O₇F, their optical and hydrogen storage properties."** *international journal of hydrogen energy* 39(25): 13174-13179.
8. Idrees, F., C. Cao, F. K. Butt, M. Tahir, M. Tanveer, I. Aslam, Z. Ali, T. Mahmood and J. Hou (2013). **"Facile synthesis of novel Nb₃O₇F nanoflowers, their optical and photocatalytic properties."** *CrystEngComm* 15(40): 8146-8152.

9. Idrees, F., J. Hou, C. Cao, F. K. Butt, I. Shakir, M. Tahir and F. Idrees (2016). "**Template-free synthesis of highly ordered 3D-hollow hierarchical Nb₂O₅ superstructures as an asymmetric supercapacitor by using inorganic electrolyte.**" *Electrochimica Acta* **216**: 332-338.
10. Fayyaz Ahmad, Farwa Idrees, Fazal-e-Aleem and Faryal Idrees* **Recent Advancements in Microwave-Assisted Synthesis of NiO Nanostructures and their Supercapacitor Properties: A Comprehensive Review,** *Current Nanomaterials*, 2018, 3, (DOI:10.2174/2405461503666180305161202)
11. Hou, J., C. Cao, F. Idrees and X. Ma (2015). "**Hierarchical porous nitrogen-doped carbon nanosheets derived from silk for ultrahigh-capacity battery anodes and supercapacitors.**" *ACS nano* **9**(3): 2556-2564.
12. Hou, J., C. Cao, X. Ma, F. Idrees, B. Xu, X. Hao and W. Lin (2014). "**From rice bran to high energy density supercapacitors: a new route to control porous structure of 3D carbon.**" *Scientific reports* **4**: 7260.
13. Hou, J., T. Cao, F. Idrees and C. Cao (2016). "**A co-sol-emulsion-gel synthesis of tunable and uniform hollow carbon nanospheres with interconnected mesoporous shells.**" *Nanoscale* **8**(1): 451-457.
14. Hou, J., K. Jiang, M. Shen, R. Wei, X. Wu, F. Idrees and C. Cao (2017). "**Micro and nano hierarchical structures of BiOI/activated carbon for efficient visible-light-photocatalytic reactions.**" *Scientific reports* **7**(1): 11665.
15. Hou, J., K. Jiang, M. Tahir, X. Wu, F. Idrees, M. Shen and C. Cao (2017). "**Tunable porous structure of carbon nanosheets derived from puffed rice for high energy density supercapacitors.**" *Journal of Power Sources* **37**(1): 148-155.
16. Tahir, M., C. Cao, F. K. Butt, S. Butt, F. Idrees, Z. Ali, I. Aslam, M. Tanveer, **A. Mahmood and N. Mahmood (2014).** "**Large scale production of novel gC₃N₄ micro strings with high surface area and versatile photodegradation ability.**" *CrystEngComm* **16**(9): 1825-1830.
17. Tahir, M., C. Cao, F. K. Butt, F. Idrees, N. Mahmood, Z. Ali, I. Aslam, M. Tanveer, M. Rizwan and T. Mahmood (2013). "**Tubular graphitic-C₃N₄: a prospective material for energy storage and green photocatalysis.**" *Journal of Materials Chemistry A* **1**(44): 13949-13955.
18. Tahir, M., C. Cao, N. Mahmood, F. K. Butt, A. Mahmood, F. Idrees, S. Hussain, M. Tanveer, Z. Ali and I. Aslam (2013). "**Multifunctional g-C₃N₄ nanofibers: a template-free fabrication and enhanced optical, electrochemical, and photocatalyst properties.**" *ACS applied materials & interfaces* **6**(2): 1258-1265.
19. Tahir, M., N. Mahmood, X. Zhang, T. Mahmood, F. K. Butt, I. Aslam, M. Tanveer, F. Idrees, S. Khalid and I. Shakir (2015). "**Bifunctional catalysts of Co₃O₄@ GCN tubular nanostructured (TNS) hybrids for oxygen and hydrogen evolution reactions.**" *Nano Research* **8**(11): 3725-3736.
20. Tahir, M., N. Mahmood, J. Zhu, A. Mahmood, F. K. Butt, S. Rizwan, I. Aslam, M. Tanveer, F. Idrees and I. Shakir (2015). "**One dimensional graphitic carbon nitrides as effective metal-free oxygen reduction catalysts.**" *Scientific reports* **5**: 12389.
21. Tahir, M., L. Pan, F. Idrees, X. Zhang, L. Wang, J.-J. Zou and Z. L. Wang (2017). "**Electrocatalytic oxygen evolution reaction for energy conversion and storage: A comprehensive review.**" *Nano Energy* **37**: 136-157.
22. Ali, Z., S. Butt, C. Cao, F. K. Butt, M. Tahir, M. Tanveer, I. Aslam, M. Rizwan, F. Idrees and S. Khalid (2014). "**Thermochemically evolved nanoplatelets of bismuth selenide with enhanced thermoelectric figure of merit.**" *AIP Advances* **4**(11): 117129.
23. Ali, Z., C. Cao, J. Li, Y. Wang, T. Cao, M. Tanveer, M. Tahir, F. Idrees and F. K. Butt (2013). "**Effect of synthesis technique on electrochemical performance of bismuth selenide.**" *Journal of Power Sources* **229**: 216-222.
24. Ali, Z., M. Mirza, C. Cao, F. K. Butt, M. Tanveer, M. Tahir, I. Aslam, F. Idrees and M. Safdar (2014). "**Wide range photodetector based on catalyst free grown indium selenide microwires.**" *ACS applied materials & interfaces* **6**(12): 9550-9556.
25. Ali, Z., M. Tahir, C. Cao, A. Mahmood, N. Mahmood, F. K. Butt, M. Tanveer, I. Shakir, M. Rizwan and F. Idrees (2016). "**Solid waste for energy storage material as electrode of supercapacitors.**" *Materials Letters* **181**: 191-195.
26. Aslam, I., C. Cao, W. S. Khan, M. Tanveer, M. Abid, F. Idrees, R. Riasat, M. Tahir, F. K. Butt and Z. Ali (2014). "**Synthesis of three-dimensional WO₃ octahedra: characterization, optical and efficient photocatalytic properties.**" *RSC Advances* **4**(71): 37914-37920.

27. Aslam, I., C. Cao, M. Tanveer, M. H. Farooq, W. S. Khan, M. Tahir, F. Idrees and S. Khalid (2015). "A novel Z-scheme WO₃/CdWO₄ photocatalyst with enhanced visible-light photocatalytic activity for the degradation of organic pollutants." *RSC Advances* **5**(8): 6019-6026.
28. Aslam, I., C. Cao, M. Tanveer, M. H. Farooq, M. Tahir, S. Khalid, W. S. Khan, F. Idrees, M. Rizwan and F. K. Butt (2015). "A facile one-step fabrication of novel WO₃/Fe₂(WO₄)₃·10.7H₂O porous microplates with remarkable photocatalytic activities." *CrystEngComm* **17**(26): 4809-4817.
29. Aslam, I., C. Cao, M. Tanveer, W. S. Khan, M. Tahir, M. Abid, F. Idrees, F. K. Butt, Z. Ali and N. Mahmood (2014). "The synergistic effect between WO₃ and gC₃N₄ towards efficient visible-light-driven photocatalytic performance." *New Journal of Chemistry* **38**(11): 5462-5469.
30. Butt, F. K., C. Cao, R. Ahmed, W. S. Khan, Z. Ali, S. Hussain, F. Idrees and M. Tahir (2014). "VLS and VS effect on ferromagnetic behaviour of SnO₂ nanobelts." *Journal of Experimental Nanoscience* **9**(1): 17-26.
31. Butt, F. K., C. Cao, R. Ahmed, W. S. Khan, T. Cao, N. Bidin, P. Li, Q. Wan, X. Qu and M. Tahir (2014). "Synthesis of novel ZnV₂O₄ spinel oxide nanosheets and their hydrogen storage properties." *CrystEngComm* **16**(5): 894-899.
32. Butt, F. K., C. Cao, F. Idrees, M. Tahir, R. Hussain, R. Ahmed and W. S. Khan (2015). "Novel Zn₂V₂O₇ hierarchical nanostructures: Optical and hydrogen storage properties." *international journal of hydrogen energy* **40**(30): 9359-9364.
33. Butt, F. K., C. Cao, F. Idrees, M. Tahir, R. Hussain and A. Z. Alshemary (2015). "Fabrication of V₂O₅ super long nanobelts: optical, in situ electrical and field emission properties." *New Journal of Chemistry* **39**(7): 5197-5202.
34. Butt, F. K., C. Cao, W. S. Khan, Z. Ali, R. Ahmed, F. Idrees, I. Aslam, M. Tanveer, J. Li and S. Zaman (2012). "Synthesis of highly pure single crystalline SnSe nanostructures by thermal evaporation and condensation route." *Materials Chemistry and Physics* **137**(2): 565-570.
35. Butt, F. K., C. Cao, W. S. Khan, M. Safdar, X. Fu, M. Tahir, F. Idrees, Z. Ali, G. Nabi and D. Yu (2013). "Electrical and optical properties of single zigzag SnO₂ nanobelts." *CrystEngComm* **15**(11): 2106-2112.
36. Butt, F. K., C. Cao, T. Mahmood, F. Idrees, M. Tahir, W. S. Khan, Z. Ali, M. Rizwan, M. Tanveer and S. Hussain (2014). "Metal-catalyzed synthesis of ultralong tin dioxide nanobelts: Electrical and optical properties with oxygen vacancy-related orange emission." *Materials Science in Semiconductor Processing* **26**: 388-394.
37. Butt, F. K., C. Cao, Q. Wan, P. Li, F. Idrees, M. Tahir, W. S. Khan, Z. Ali, M. J. Zapata and M. Safdar (2014). "Synthesis, evolution and hydrogen storage properties of ZnV₂O₄ glomerulus nano/microspheres: a prospective material for energy storage." *international journal of hydrogen energy* **39**(15): 7842-7851.
38. Butt, F. K., F. Idrees, M. Tahir, C. Cao, R. Hussain, R. Ahmed and B. U. Haq (2015). "Fabrication of ZnV₂O₆ nanostructures: Their energy storage and PL properties." *Materials Letters* **155**: 15-17.
39. Butt, F. K., M. Mirza, C. Cao, F. Idrees, M. Tahir, M. Safdar, Z. Ali, M. Tanveer and I. Aslam (2014). "Synthesis of mid-infrared SnSe nanowires and their optoelectronic properties." *CrystEngComm* **16**(17): 3470-3473.
40. Butt, F. K., M. Tahir, C. Cao, F. Idrees, R. Ahmed, W. S. Khan, Z. Ali, N. Mahmood, M. Tanveer and A. Mahmood (2014). "Synthesis of novel ZnV₂O₄ hierarchical nanospheres and their applications as electrochemical supercapacitor and hydrogen storage material." *ACS applied materials & interfaces* **6**(16): 13635-13641.
41. Khalid, S., C. Cao, A. Ahmad, L. Wang, M. Tanveer, I. Aslam, M. Tahir, F. Idrees and Y. Zhu (2015). "Microwave assisted synthesis of mesoporous NiCo₂O₄ nanosheets as electrode material for advanced flexible supercapacitors." *Rsc Advances* **5**(42): 33146-33154.
42. Mahmood, T., C. Cao, F. K. Butt, H. Jin, Z. Usman, W. S. Khan, Z. Ali, M. Tahir, F. Idrees and M. Ahmed (2012). "Elastic, electronic and optical properties of cotunnite TiO₂ from first principles calculations." *Physica B: Condensed Matter* **407**(22): 4495-4501.
43. Mahmood, T., C. Cao, M. Tahir, F. Idrees, M. Ahmed, M. Tanveer, I. Aslam, Z. Usman, Z. Ali and S. Hussain (2013). "Electronic, elastic, acoustic and optical properties of cubic TiO₂: A DFT approach." *Physica B: Condensed Matter* **420**: 74-80.

44. Sajad Hussain Chuanbao Cao, W. S. K., Ghulam Nabi, Zahid Usman, Abdul Majid, Thamer Alharbi, Zulfiqar Ali, Faheem K Butt, Muhammad Tahir, MuhammadTanveer, Faryal Idress (2014). **"Cu₂O/TiO₂ nanoporous thin-film heterojunctions: Fabrication and electrical characterization."**
45. Tanveer, M., C. Cao, Z. Ali, I. Aslam, F. Idrees, W. S. Khan, F. K. But, M. Tahir and N. Mahmood (2014). **"Template free synthesis of CuS nanosheet-based hierarchical microspheres: an efficient natural light driven photocatalyst."** *CrystEngComm* **16**(24): 5290-5300.
46. Tanveer, M., C. Cao, I. Aslam, Z. Ali, F. Idrees, W. S. Khan, F. K. Butt, M. Tahir and A. Mahmood (2014). **"Facile Synthesis of CuS Nanostructures: Structural, Optical and Photocatalytic Properties."** *Science of Advanced Materials* **6**(12): 2694-2701.
47. Tanveer, M., C. Cao, I. Aslam, Z. Ali, F. Idrees, W. S. Khan, M. Tahir, S. Khalid, G. Nabi and A. Mahmood (2015). **"Synthesis of CuS flowers exhibiting versatile photo-catalyst response."** *New Journal of Chemistry* **39**(2): 1459-1468.
48. Tanveer, M., C. Cao, I. Aslam, Z. Ali, F. Idrees, M. Tahir, W. S. Khan, F. K. Butt and A. Mahmood (2014). **"Effect of the morphology of CuS upon the photocatalytic degradation of organic dyes."** *RSC Advances* **4**(108): 63447-63456.