

MUHAMMAD ALI

Lecturer/Laboratory Manager

(Materials Research Laboratory Department of Physics University of Peshawar)

<http://www.uop.edu.pk/departments/?q=Department-of-Physics&r=Teaching-Faculty>

1. Research and Teaching Fields of Interest:

- i. Nanotechnology (Sensors, Nanogenerators, and synthesis of nanomaterials), Solar Energy and Electricity (3rd generation Solar cells), Fuel Cell (PEM & Solid Oxide), Material Science and Engineering
- ii. Environmental Physics and Environmental Monitoring
- iii. Power Electronics and Instrumentation Embedded Control System

2. Education:

MS, 2010-2012	Department of Electronic Engineering, GIK University, Pakistan
Dissertation:	Monitoring PV Parameters and Real-Time Characterization of Solar Panels
Supervisor:	Prof. Dr. Khasan S. Karimov
CGPA:	<u>3.43/4</u>
MSc, 2007-2009	Department of Electronics, University of Peshawar, Peshawar, Pakistan
Dissertation:	Automating an industrial chemical process through a Programmable Logic Controller
Marks Obtained:	<u>830/1100 with Distinction</u>

3. Positions Held:

Nov 2013 – Present	Lecturer/Lab Engineer., Materials Research Laboratory, Department of Physics, University of Peshawar (10 Years& 2 months)
Nov2012 – Nov 2013	Research Associate., Department of Electrical Engineering, University of Engineering and Technology, Peshawar, Pakistan (1 Year)

4. Awards:

2023-24	Official Mentor of the Pakistan Science Foundation's, STFS Projects 2024, under the Ministry of Science and Technology, Islamabad, Pakistan
Oct 2023	Appreciation award by Vice Chancellor University of Peshawar For "Design and Implementation of a 12 kW Grid-Connected Solar Energy System for the Department of Physics to Maximize Feed-in Tariffs".
March 2013	Appreciation award from Peshawar Electric Supply Company PESCO for "Designing and implementation of a state-of-the-art electricity theft solution".
Oct 2009	Third highest distinction award in Masters of Electronics

5. Publications:

Total IF=74.07

1. **M.Ali**, Mahmood.K, Khasan.S.Karimov, " **Design of a cost-efficient PV parameters Monitoring system**", Sci., Tech. and Dev., 31 (3): 244-250, ISSN 0254-6418, 2012. <https://docsdrive.com/pdfs/std/std/2012/244-250.pdf>.
2. Khasan S. Karimov, MuhammadAbid, Muhammad Saleem, Khakim M. Akhmedov, Muhammad M. Bashir, Umar Shafique, Muhammad **M. Ali**, **Temperature gradient sensor based on CNT composite**, Physica B: Condensed Matter, Volume 446, 1 August 2014, Pages 39-42, ISSN 0921-4526. **(IF=2.988)** <https://doi.org/10.1016/j.physb.2014.04.018>
3. Khasan Skarimov, Muhammadabid³, Dur-E-Zehra Baig, Syed A Moiz, Adam Khan, T. A. Qasuria, Khakimma Khmedov, **Muhammad Ali** and Umair Rao, "**Combined Photo-Electric Cell and Thermoelectric Generator for Demonstrative Purposes**" Academia Journal of Scientific Research 5(1): 022-033, January 2017, ISSN 2315-7712. **(IF 4.003)** <https://doi.org/10.15413/ajsr.2017.0160> <https://www.academiapublishing.org/journals/ajsr/instructions>
4. Hayat, Khizar, Falak Niaz, Shahid Ali, M. Javid Iqbal, M. Ajmal, **M. Ali**, and Yaseen Iqbal. 2016. "**Thermoelectric Performance and Humidity Sensing Characteristics of La2CuO4 Nanofibers.**" *Sensors and Actuators, B: Chemical* 231:102–9. **(IF=9.221)** <https://doi.org/10.1016/j.snb.2016.02.127>

5. Khizar Hayat, S. Shaheen Shah, M. Yousaf, M. Javid Iqbal, **M. Ali**, S. Ali, Muhammad Ajmal, Yaseen Iqbal, **Processing, device fabrication and electrical characterization of LaMnO₃ nanofibers**, *Materials Science in Semiconductor Processing*, Vol 41, pp. 364-369, 20 Nov 2016. (IF=4.644) <https://doi.org/10.1016/j.mssp.2015.10.009>
6. Muhammad Asif, **M. Ali**, Naveed Ahmad, Sana Ul Haq, Tariqullah Jan and Muhammad Arshad, **Design and Development of a Data Logger Based on IEEE 802.15.4/ZigBee and GSM**, *Proceedings of the Pakistan Academy of Sciences: Pakistan Academy of Sciences A. Physical and Computational Sciences* 53 (1): 37–48 (2016) ISSN: 2518-4245. (IF=0.4) <https://ppaspk.org/index.php/PPAS-A/article/view/346>
7. Shahid Ali, Younas Khan, Yaseen Iqbal, **M Ali**, **Size determination of gold nanoparticles in silicate glasses by UV–Vis spectroscopy**, *Journal of Nanophotonics*. 11(1), 016011 (Mar 08, 2017). (IF=1.494) <https://doi.org/10.1117/1.JNP.11.016011>
8. K. Malook, Ihsan-ul-Haque, M. Khan, and **M. Ali**, “**Polypyrrole-CuO based composites, promotional effects of CuO contents on polypyrrole characteristics**,” *J. Mater. Sci. Mater. Electron.*, vol. 0, no. 0, p. 0, 2019. (IF=2.779) <https://doi.org/10.1007/s10854-019-00673-x>
9. Mahmood Khan, Javed Iqbal, **M Ali**, Afaq Muhmmad, Ali Zahir, Nadir Ali “**Designing and implementation of energy-efficient wireless photovoltaic monitoring system**,” *Trans. Emerg. Telecommun. Technol.*, no. April, pp. 1–11, 2019. (IF=3.41) <https://doi.org/10.1002/ett.3685>
10. Bubli, Irum, Ali, Shahid, **Ali, M**, Hayat, Khizar, Iqbal, Yaseen, Zulfiqar, Syed Cattaruzza., “**Enhancement of solar cell efficiency via luminescent downshifting by an optimized coverglass**,” *Ceram. Int.*, no. September, pp. 1–6, 2019. (IF=3.45) <https://doi.org/10.1016/j.ceramint.2019.09.193>
11. K. Malook, H. Khan, and M. Ali, “**Materials Science in Semiconductor Processing Investigation of room temperature humidity sensing performance of mesoporous CuO particles**,” *Mater. Sci. Semicond. Process.*, vol. 113, no. January, p. 105021, 2020. (IF=3.927) <https://doi.org/10.1016/j.mssp.2020.105021>
12. R. Aman Qazi, M. Saleem Khan, M. Siddiq, R. Ullah, L. Ali Shah, and M. Ali, “**Synthesis and characterization of functionalized MWCNTs/PMMA composites: device fabrication for RH sensing**,” *Polym. Technol. Mater.*, vol. 59, no. 14, pp. 1608–1620, 2020. (IF=1.973) <https://doi.org/10.1080/25740881.2020.1759631>
13. Malook, K., **Ali, M.**, & Ul-Haque, I. (2021). **Elucidation of room temperature humidity sensing properties of Mn2O3 particles**. *Applied Physics A*, 127(10), 758. <https://doi.org/10.1007/s00339-021-04909-8> (IF=2.584)
14. Hussain, M., Hasnain, S., Khan, N. A., Bano, S., Zuhra, F., **Ali, M.**, Khan, M., Abbas, N., & Ali, A. (2021). **Design and Fabrication of a Fast Response Resistive-Type Humidity Sensor Using Polypyrrole (Ppy) Polymer Thin Film Structures**. *Polymers*, 13(18), 3019. <https://doi.org/10.3390/polym13183019> (IF=4.329)
15. Rashid, H. U., **Ali, M**, **Synthesis and Fabrication of Polyvinyl Alcohol Nanofibers Based Capacitive Relative Humidity Sensor**. Sir Syed University Research Journal of Engineering & Technology, ., (2021). 11(01). <https://doi.org/10.33317/ssurj.303>.
16. Rashid, H. U., **Ali, M.**, Sarker, M. R., Md Ali, S. H., Akhtar, N., Khan, N. A., Asif, M., & Shah, S. (2021). **Synthesis, characterization, and applications of silver nanofibers in humidity, ammonia, and temperature sensing**. *Micromachines*, 12(6). <https://doi.org/10.3390/mi12060682> (IF=2.891)
17. K. Bibi, I. Ahmad, K. Hayat, **M. Ali**, and S. K. Shah, “**Simulation and Experimental Device Performance Analysis of TiO2Based Inverted Organic Solar Cells**,” *J. Electron. Mater.*, vol. 51, no. 9, pp. 5181–5187, 2022, <https://doi.org/10.1007/s11664-022-09757-7>. (IF=2.047)
18. Sommya Fazal, Falak Zaman, Shahid Ali, Yaseen Iqbal, N. Chanithima, S. Tuscharoen, **Muhammad Ali**, Khizar Hayat, Syed Zulfiqar, Muhammad Arshad, A. El-Denglawey, J. Kaewkhao, “**Investigation of europium-doped aluminum phosphate glass for a red light generation**,” *Ceramics International*, Volume 48, Issue 17, 2022, Pages 24751-24757, ISSN 0272-8842, <https://doi.org/10.1016/j.ceramint.2022.05.124>. (IF=5.532)
19. Fayaz, Muhammad, Shahid Ali, Salma Bibi, Yaseen Iqbal, **Muhammad Ali**, Falak Zaman, Gul Rooh, Mohamed Fadhal, and J. Kaewkhao. 2023. “**Luminescence and Energy Transfer Mechanism in Ce3+ and Gd3+ Ions in Bismuth Borate Glass**.” *Ceramics International*. <https://doi.org/10.1016/j.CERAMINT.2023.04.127>. (IF=5.532)
20. Ahmad, Jebran, Muhammad Yaseen, Haq Zia, **Muhammad Ali**, Latif Ur, and Ata Ur. 2023. “**Designing Copper – Nickel Hybrid Nanoparticles Based Resistive Sensor for Ammonia Gas Sensing**.” *Materials Chemistry and Physics* 305(April):127868. <https://doi.org/10.1016/j.matchemphys.2023.127868>. (IF=4.788)
21. Shah, Yousaf Ali, Mutabar Shah, Khan Malook, Afzal Khan, and **Muhammad Ali**. 2023. “**Fabrication and Characterizations of Ultra-Sensitive Capacitive / Resistive Humidity Sensor Based on CNT - Epoxy Nanocomposites**.” *Journal of Materials Science* (0123456789). <https://link.springer.com/article/10.1007/s10853-023-08926-1>. (IF=4.5)
22. Hamza Ali, Muhammad Uzair, Yaseen Iqbal, Muhammad Ali, Waqas Ahmad, “**Electrical properties of Barium titanate and graphite incorporated PVA matrix composite (PVA-BaTiO3-G) nanofibers**”, *Materials Science and Engineering: B*, Volume 296, 2023, 116655, ISSN 0921-5107, <https://doi.org/10.1016/j.mseb.2023.116655>. (IF=3.9)
23. Muhammad Ali, Shahid Ali, Haroon ur Rashid, Yaseen Iqbal, “**Improvement in solar cells efficiency with luminescent downshifting nanocomposite lamination: A green alternative for ethylene–vinyl acetate**,

Solar Energy", Volume 282, November 2024, 112986, ISSN 0038-092X,

<https://doi.org/10.1016/j.solener.2024.112986>. **Improvement in solar cells efficiency with luminescent downshifting nanocomposite lamination: A green alternative for ethylene-vinyl acetate - ScienceDirect (IF=6.8)**

24. Bibi, J., Uzair, M., Hussain, M. *et al.* Electrospun luminescent carbon dots and poly methyl methacrylate composite nanofibers (CDs/PMMA-CNFs) for their potential applications in UV sensing. *J Mater Sci: Mater Electron* **37**, 977 (2026). <https://doi.org/10.1007/s10854-026-17368-9> **(IF=2.9)**

6. Patents:

- 1) Kh.S.Karimov, Kh.M.Akhmedov, Dur-e-Zehra Baig, Adam Khan, Tahseen Amin Khan Qasuria, Noshin Fatima, **Muhammad Ali**, Umair Rao, S.A.Moiz, Solar hybrid thermoelectric collector, Patent No.887 of the Republic of Tajikistan, 17 April, 2018.

7. Projects as a Team Lead:

1. Synthesis of a novel cover glass for the next-generation photovoltaic, funded by the Higher Education Commission, National Research Program for Universities, Islamabad, Pakistan. Research Grant: 15.3 Million PKR.
2. "Research on Transition Metals and Rare-Earth Doped Nanomaterials for potential applications in lasers, telecommunication, live cell-imaging, and cancer dosimetry," funded by the Directorate of Science & Technology, Government of Khyber Pakhtunkhwa (KPK), Pakistan. Research Grant: 27.4 Million PKR.
3. "Design and Implementation of a wireless Intelligent Transportation system based on queuing theory algorithm," funded by the Pakistan Science Foundation (PSF), Information and Communication Technology (ICT), and Directorate of Science and Technology (Dost) KPK. Research Grant: 1.5 Million PKR.
4. "Development of a Smart grid based on Power Line Communication (PLC) and wireless sensor network," funded by the Pakistan Science Foundation (PSF), Information and Communication Technology (ICT), and Directorate of Science and Technology (Dost) KPK. Research Grant: 2.5 million PKR."

8. Certifications:

- I. 21 Days of training on Teaching and Research Andragogy, at Higher Education Commission Peshawar conducted by National Institute of Higher Education, (NAHE) **(Successfully Completed in DEC 2023)**.
- II. 3 Days Training on Renewable Energy Technologies, Pakistan Council of Renewable Energy Technology, Islamabad, Pakistan **(Successfully Completed in 2013)**
- III. 20 Days of hands-on Training on Advanced HMI, PLC & SCADA Programming at the National Institute of Electronics, Ministry of Science and Technology Pakistan. **(Successfully Completed in 2010)**
- IV. One month of hands-on training on Chip design based on FPGAs at Skill Development Council Islamabad, Pakistan. **(Successfully Completed in 2010)**
- V. 10 Days Training in PCB Designing and Fabrication at the University of Peshawar institute of physics and electronics. **(Successfully Completed in 2009)**

9. Handon Experinces:

- * Metrological LiDAR
- * Sun Photometer
- * LABVIEW based Instrumentation
- * Industrial PLC, HMI and SCADA systems
- * On-Off Grid Solar Systems
- * CV and EIS
- * RF DC Magnetron
- * Plasma Ozone cleaning
- * Solar cell Simulator and IPCE, EQE/IQE Quantum Efficiency Measurement Systems
- * Fourier transform infrared spectroscopy (FTIR), PerkinElmer Spectrum 2/UATR
- * RF/DC Magnetron
- * Ferroelectric Analyser
- * Photoluminescence (PL) spectroscopy, PerkinElmer LS45 UV-Vis-NIR Spectroscopy
- * PerkinElmer Lambda 1050/URA
- * X-ray powder diffraction (XRD), X'Pert³ Powder PANalytical
- * Nano volt measurement of thermal and piezoelectric devices
- * Nano-voltmeter KEITHLEY 2182A characterization of electronic devices, Materials, and Solar cells.
- * Agilent LCR Meter E4980A up to 2Mhz

- * LCR measurement at 1Mhz-3Ghz in microwave and millimeter wave applications, Agilent 4287A
- * Impedance analysis at 1Mhz-3Ghz (room temperature) Agilent E4991A
- * Impedance analysis at 1Mhz-3Ghz (High temperature up to 600 C^o) Agilent E4991A
- * Quality factor, Temperature coefficient of resonance frequency, Bandwidth, Tuneability, and other related measurements to microwave resonators, Agilent Network Analyzer E5071C 9 Khz-4.5 Ghz
- * Thermal Dilatometric Analysis (TDA), Orton Dilatometer 2010-STD
- * Thin film deposition, Spin Coater Laurell Model WS-400-6NPP-LITE
- * Density measurement, Electronic Densimeter MD-300S
- * Micro Hardness Test, HVS-1000, Pellet Press Carver 3887-1SD0A05
- * Particle Size analysis up to 0.1 Micrometer, Beckman Coulter Multisizer-3 MS3 Milling, Tube Furnace maximum up to 1800 C^o
- * Drying (Oven), Cutting of Samples, Polishing, Grinding, Milling, ultrasonic Bath/Sonication/ Hot Plate Stirrer, Pressing per pellet, Glass Melting Furnace maximum up to 1500 C^o, Electrospinning-Nano fibers up to 20-30KV, Heat treatment under Gas environment up to 1700 C^o, Per hour or Less than one hour
- * Kjeldahl nitrogen analyser
- * Fat Extractors
- * Torsion testing units and UTM.
- * Impedance Analysers

10. References:

Prof. Dr. Khan Alam

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