

Niaz Ahmad Niaz

INSTITUTE OF PHYSICS
BAHAUDDIN ZAKARIYA
UNIVERSITY, 60800, MULTAN,
PAKISTAN
niazpk80@bzu.edu.pk
niazpk80@gmail.com

Academic Qualifications

YEAR	DEGREE	SUBJECT	UNIVERSITY
2023	POST-DOC	Energy Storage Materials (Batteries)	University of Glasgow, UK
2012	Ph.D.	Mg-Based Hydrogen Storage Materials	COMSATS Institute of Information Technology, Islamabad, Pakistan
2004	M. Sc.	Physics	BAHAUDDIN Zakariya University Multan
2001	B.Sc.	Math-Physics	BAHAUDDIN Zakariya University Multan

Major Courses

- Material Science
- Classical Mechanics
- Quantum Mechanics
- Laser Physics
- Nano Science & Technology
- Solid State Physics
- Electrodynamics
- Nanoparticles and Industrial Catalysis
- Mathematical & computational Physics
- Statistical Mechanics
- Surface Physics
- Diffraction Methods of Analysis
- Vacuum Science & Technology
- Nano-Chemistry

Profile

- Well versed in Hydrogen Storage Materials
- Metal Organic Frame-works (MOFs) for hydrogen storage applications
- Present interest in design novel material for Li batteries.
- Designed novel conducting polymer based of materials for super-capacitor applications.
- Experienced in built a setup for the preparation of CNTs for different industrial applications.
- Taught different courses of physics, wrote instructional manuals to help guide students in physics teaching labs.
- Published research papers in well-known international journals and presented my work in different international conferences.
- Enthusiastic, self-motivated and committed.

Professional Experience

January, 16th 2021 to to-date Associate Professor (Tenured)

April, 14th 2014 – to 15-01-2012 Assistant Professor on (TTS)

- Involved in the research activities to design novel materials for Energy Storage Applications.
- Supervised two Ph.D. and 25 M.Phil students research projects.

March 2013 to March 2104 Assistant Professor on (IPFP), BZU, Multan

- Taught different courses under graduation and graduation level

Fall—2010 to Spring 2012

- Teaching Undergraduate and MS/Ph.D. level courses in IIU, Islamabad and Bahria University, Islamabad as visiting faculty

Advisory / Administrative Services Rendered

1. *Member Board of studies, Institute of Physics, Bahauddin Zakariya University, Multan*
2. *Member DTRC, Institute of Physics, Bahauddin Zakariya University, Multan*
3. *Member Board Studies, Mir Chaker University of Engineering and Technology, Dera Ghazi Khan (2021-2024)*
4. *Member Board of Studies, Department of Physics, Ghazi University, Dera Ghazi Khan*
5. *Member Board of Studies, Department of Physics, University of OKARA*
6. *Member DTRC, Department of Physic, PIR MEHR ALI SHAH Arid Agriculture University, Rawalpindi*

Other Activities

- Deputy Departmental Student Advisor (2015-2017),
- Secretary Finance, Zakaryian Alumni of All Physicists (ZAAP) (2016-2024)
- Member departmental horticultural committee, member departmental maintainess committee.
- Assistant Superintendent Hostel Usman Hall July 2014-Nov.2015
- Have been member of organizing committee for international conferences in NCP

Fellowships/Scholarships

- HEC POST-DOC Fellowships under“HEC Post-Doctoral Fellowships Program (Phase III)-Batch 3 (2023)
- Got IRSIP Scholarship to visit Peking University, China for six month 2010
- Won talented researcher exchange program (TREXP) award from British council 2009.
- Indigenous-5000 Scholarship from HEC, Pakistan for five year.2005

List of Publications

- 1) S Ahmad, M Imran, N A Niaz, F Hussain, U Rasheed, A MTighezza, RMA Khalil, M Irfan, Quantum capacitance engineering in homo and hetero bilayer structure of blue phosphorene electrode for supercapacitor applications: Using ab-initio calculation, *Journal of Energy Storage*, 99 **(2024)** 113206
- 2) M Sajid, M Ishaque, M Imran, **N. A. Niaz**, F Hussain, U Rasheed, RM A Khalil, S M Ali, SS Hayat, MShoaib, Theoretical occurrence of quantized chemistry of conduction mechanism in layered perovskite for the application of Resistive Random Access Memory devices, *International Journal of Quantum Chemistry*, 124 **(2024)** e27281
- 3) A Bibi, A Shakoor, M Raffi, MHina, **N. A. Niaz**, S A Fatima, M N Qureshi, Exploring the potential of polyaniline-calcium titanate (PANI-CaTiO₃) nanocomposites in supercapacitors: Synthesis and electrochemical investigation, *Journal of Energy Storage*, 78 **(2024)** 110321
- 4) U Rasheed, M Imran, **N. A. Niaz**, F Hussain, A Mohamed Tighezza, RM AKhalil, Ab-initio study of quantized conduction mechanism in tri layered hetero-structure for scaled down memory device applications, *Materials Today Communications* 38 **(2024)** 108499
- 5) I. A. Shah, M. Imran, **N. A. Niaz**, F. Hussain, U. Rasheed, M. Alam, S. M. Ali, RMA Khalil, M. Shoaib, Revealing structural, elastic, optoelectronic and thermoelectric properties of lead-free Ba₂XTiO₆ (X= Hf, Ce, Te) double perovskite for solar cells applications, *Journal of Computational Electronics*, 23 **(2024)** 396-406

- 6) A.Bibi, A. Shakoor, **N. A. Niaz**, M.Raffi, M. Salman, Z. Usman, Enhanced solar-driven photocatalytic and photovoltaic performance of polymer composite containing carbon black and calcium titanate nanoparticles, *Polymer Bulletin*, 81, **(2024)**8359
- 7) M. Awais, F.Hussain, K. N. Riaz, **N. A. Niaz**, A. Shakoor, Tommaso Dorigo, F. Ahmad, U.Mamtaaz, First-principles calculations to investigate structural, electronic, and optical properties of AgWO₄ and PdWO₄ tungstate materials for optoelectronic applications, *Next Materials*, 4 **(2024)** 100113
- 8) M. K. Saleem, **N. A. Niaz**, A. Shakoor, F. Hussain, S.Manzoor, S. A. Khan, Duncan H Gregory, Fabrication of Bi-Functional Samarium Oxide/Copper Oxide Nanocuboid Electrocatalyst for Electrochemical Water Splitting, *Energy Technology*, **(2024)** 2400502 DOI: 10.1002/ente.202400502
- 9) S. Ahmad, M. Imran, N. A. Niaz, F. Hussain, U. Rasheed, A. Mohamed Tighezza, RMA Khalil, M Irfan, Unraveling quantum capacitance of black phosphorene by the doping of non-metals for energy storage applications using DFT method, *Surfaces and Interfaces*, 54(2024)105187
- 10) M. Irfan, A. Mustafa, A. Shakoor, N.A. Niaz, N. Anwar, M. Imran and A. Majid, Raman spectroscopy and electrical properties of Polypyrrole doped dedecylbenzene sulfonic acid/Y₂O₃ composites, *Revista Mexicana de Fisica* 70 **(2024)** 0105021-7
- 11) InamKarim, Faisal Iqbal, **Niaz Ahmad**, Abdul Shakoor, JunaidNaeem, Exploration of mechanical and structural properties of bitumen modified with polyethylene glycol and ZnO-nano particles, *Polymers and Polymer Composites*, 31 **(2023)**09673911231217838
- 12) Muhammad Kashif Saleem, Karam Jabbour, **N. A. Niaz**, Sumaira Manzoor, Muhammad Naeem Ashiq, Ayesha Hameed, Abdul Shakoor, Khaled Fahmi Fawy, Muhammad Shuaib Khan, Facile engineering of Co₃O₄/Pr₂O₃ nanostructure for boosted oxygen evolution reaction, *Applied Physics A*, 129 **(2023)**833
- 13) **N. A. Niaz**, Abdul Shakoor, Fayyaz Hussain, Syed Mansoor Ali, Umar Mahmood, Atsushi Inoishi, Rana Muhammad Arif Khalil, Duncan H Gregory, Improved structural, electronic, and electrochemical properties of MoS₂/graphene oxide composite for Li-ion batteries applications, *Journal of Materials Science: Materials in Electronics*, 34 **(2023)**1942

- 14) F Kousar, U Rasheed, M. Imran, F.Hussain, **N. A. Niaz**, Syed Mansoor Ali, Muhammad Ali Shar, RM Arif Khalil, Muhammad Naeem Ashiq, Sadia Khalid, First principle investigation of metallic ion conduction mechanisms in oxide materials for optical responsive storage devices, *Physica B: Condensed Matter*, 665 (2023) 415070
- 15) A.Bibi, Abdul Shakoor, **Niaz Ahmad Niaz**, Muhammad Raffi, Muhammad Salman, Enhanced optical, electronic and dielectric properties of DBSA-doped polyaniline–calcium titanate composites, *Bulletin of Materials Science*, 46 (2023) 185
- 16) Muhammad Kashif Saleem, **Niaz Ahmad Niaz**, Khaled FahmiFawy, Shaimaa AM Abdelmohsen, Meznah M Alanazi, Fayyaz Hussain, Muhammad Naeem Ashiq, Umbreen Rasheed, Electrocatalytic behavior of Ni-Co-Fe₃O₄ nanospheres for efficient oxygen evolution reaction, *Journal of Electroanalytical Chemistry*, 940 (2023) 117503
- 17) NR Khalid, Muntaha Sabir, Faisal Ali, MB Tahir, Muhammad Arshad Javid, **N.A. Niaz**, Rizwan Ahmed, M Rafiqu, Green synthesis and characterizations of bi-functional Mo-doped ZnO nanostructures for antimicrobial and photocatalytic applications, *Materials Chemistry and Physics*, 296 (2023) 127306
- 18) Ariba Bibi, Abdul Shakoor, **Niaz Ahmad Niaz**, Sajjad Haider, Muhammad Saeed Akhtar, Electrical transport properties and thermoelectric power studies of polyaniline–CaTiO₃ composites, *Polymer Bulletin*, 80 (2023) 5005-5021
- 19) Nadeem Anwar, Abdul Shakoor, **Niaz Ahmad Niaz**, Ghulam Ali, Muhammad Qasim, Muhammad Irfan, Arshad Mahmood, Investigation of dielectric relaxation behavior, electric modulus and a.c conductivity of low doped polyaniline cadmium oxide (PANI-CdO) nanocomposites, *Polymer Bulletin* 79 (2022) 6581–6600
- 20) AribaBibi, Abdul Shakoor and **Niaz Ahmad Niaz**, Polyaniline-calcium Titanate Perovskite Hybrid Composites: Structural, Morphological, Dielectric and Electric Modulus Analysis, *Polymer and Polymer Composites*, 30 (2022) 1-13
- 21) N. Anwar, **Niaz Ahmad Niaz**, A. Shakoor, M. Qasim, M. Ahmad, The structural and electrical properties of polyaniline carbon nanotubes (PANI-CNTs) composite, *Dijest Journal Nanomaterials and Biostructures*, 17 (2022) 1535-1547
- 22) Mir Waqas Alam, N. R. Khalid, Sumaira Naeem, **Niaz Ahmad Niaz**, Tanveer Ahmad Mir, Insha Nahvi, Basma Souayeh and Noushi Zaidi, Novel Nd-N/TiO₂ Nanoparticles

- for Photocatalytic and Antioxidant Applications Using Hydrothermal Approach, *Materials*, 15 (2022)6658
- 23) Umbreen Rasheed, Muhammad Imran, Abdul Shakoor, **Niaz Ahmad Niaz**, Fayyaz Hussain, Rana Muhammad Arif Khalil , Mohammad Alkhedher and Sayed M. Eldin, Theoretical Investigation of Origin of Quantized Conduction in 2D Layered Ruddleson–Popper Perovskite Hetrostructure forthe RRAM Applications, *Energies*, 15 (2022) 9410
 - 24) **N. A. Niaz**, A. Shakoor, F. Hussain, M. Iqbal, N.R. Khalid , M. K. Saleem, N. Anwara, J. Ahmad, Structural and electronic properties of PANI-ZnO-TiO₂ nanocomposite, *Journal of Ovonic Research*, 18 (2022)713-722
 - 25) Nadeem Anwar, Abdul Shakoor, Ghulam Ali, Haseeb Ahmad, **Niaz Ahmad Niaz**, Seerat-Ul-Arooj, Arshad Mahmood, Synthesis and electrochemical characterization of polyaniline doped cadmium oxide (PANI-CdO) nanocomposites for supercapacitor applications, *Journal of Energy Storage*, 55 (2022) 105446
 - 26) E A Khera, C Mahata, M Imran, **N. A. Niaz**, F Hussain, RMA Khalil, U Rasheed, Improved resistive switching characteristics of a multi-stacked HfO₂/Al₂O₃/HfO₂ RRAM structure for neuromorphic and synaptic applications: experimental and computational study, *RCS Advances*, 12 (2022)11649-11656
 - 27) A Bibi, A Shakoor, **N. A.Niaz**, Studies on Electrical, Dielectric and Seebeck Measurement of Polyaniline-Cadmium Oxide Nanocomposite, *Polymer Science, Series B*, 63 (2021) 925-932
 - 28) RMA Khalil, F Hussain, **N. A. Niaz**, Studies of Molecular Dynamics and Electronic Structure in Cubic-SiC by Using Density Functional Tight Binding Approach, *Journal of Materials and Physical Sciences*, 2 (2021) 88-94
 - 29) NR Khalid, M R Kamal, MB Tahir, M Rafique, **N. A. Niaz**, Y Ali, M Alzaid, H Alrobei, S Muhammad, Fabrication of direct Z-scheme MoO₃/N–MoS₂ photocatalyst for synergistically enhanced H₂ production, *International Journal of Hydrogen Energy*, 46(2021) 39822-39829
 - 30) F Kousar, U Rasheed, M Imran, **N A Niaz**, F Hussain, M N Ashiq, A M Rana, C Mahata, First principle investigation of polaronic resistive switching behavior in

- titaniabased memristors with different charge states, *Physica E: Low-dimensional Systems and Nanostructures*, 134, **(2021)** 114857
- 31) N Anwar, A Shakoor, **N A Niaz**, G Ali, M Qasim, M Irfan, A Mahmood, Investigation of dielectric relaxation behavior, electric modulus and ac conductivity of low doped polyaniline cadmium oxide (PANI-CdO) nanocomposites, *Polymer Bulletin*, **(2021)** 1-20
 - 32) N Anwar, A Shakoor, W Qamar, **N A Niaz**, M Qasim, M Irfan, Fabrication of Schottky Diodes Based on Cu Electrode and Polyaniline Cadmium Oxide (PANI/CdO) Composites, *Polymer Science, Series B*, 63, **(2021)** 432-440
 - 33) F Kousar, URasheed, RMA Khalil, **N A Niaz**, F Hussain, M Imran, U Shakoor, H Algadi, N Ashiq, First principles investigation of oxygen vacancies filaments in polymorphic Titania and their role in memristor's applications, *Chaos, Solitons & Fractals*, 148, **(2021)** 111024
 - 34) N Anwar, M Ishtiaq, A Shakoor, **N. A. Niaz**, T ZRizvi, Muhammad Qasim, M Irfan, AMahmood, Dielectric properties of polymer/clay nanocomposites, *Polymers and Polymer Composites*, 29, **(2021)**, 807-813
 - 35) Faisal Ali, NR Khalid, **N.A. Niaz**, G Nabi, MB Tahir, M Rafique, Novel Cr and Sn co-doped Co₃O₄ polygon-based electrode material for supercapacitor application, *J. of Materials Science: Materials in Electronics*, 9 **(2021)** 11467-11477
 - 36) E A Khera, H Ullah, MImran, **N. A. Niaz**, F. Hussain, RMA Khalil, C Mahata, S Kim, ab initio study of oxygen vacancy effects on structural, electronic and thermoelectric behavior of AZr_{1-x}M_xO₃ (A= Ba, Ca, Sr; M= Al, Cu, x= 0.25) for application of memory devices, *Journal of Molecular Graphics and Modelling*, 103 **(2021)** 107825
 - 37) **N. A Niaz**, A. Shakoor, M. Imran, N. R. Khalid, Fayyaz Hussain, H. Kanwal, M. Maqsood, S. Afzal, Enhanced Electrochemical Performance of MoS₂/PPy Nanocomposite as Electrodes Material for Supercapacitor Application, *J. of Materials Science: Materials in Electronics*, 31 **(2020)** 11336
 - 38) N. R. Khalid, UmmeyMazia, M. B. Tahir, **N. A. Niaz**, Muhammad Arshad, Photocatalytic degradation of RhB from an aqueous solution using Ag₃PO₄/N-TiO₂ hetrostructure, *Journal of Molecular Liquids*, 313 **(2020)** 113522

- 39) N Anwar, M Asif, A Shakoor, **N. A. Niaz**, M Qasim, M Irfan, G Ali, AMahmood, Electrical Properties and Characteristics of Polypyrrole Cadmium Oxide (PPy-CdO) Nanocomposite Schottky Diodes, *Polymer Science, Series A*, 62 (2020) 543-549
- 40) N Rashid, **N. A. Niaz**, A Shakoor, A Mahmood, Effect of neodymium of barium based spinal ferrites, *J. of Materials Science: Materials in Electronics*, 31 (2020) 9018-9025
- 41) E A Khera, H Ullah, M Imran, **N.A. Niaz**, F Hussain, R.M. Arif Khalil, U Rasheed, Sungjun Kim, Structural, electronic and optical properties of transition metal doped $\text{Hf}_{1-x}\text{TM}_x\text{O}_2$ (TM = Co, Ni and Zn) using modified TB-mBJ potential for optoelectronic memristors devices, *Optik*, 212 (2020) 164677
- 42) **N.A. Niaz**, F Hussain, RMA Khalil, M Imran, A Shakoor, NR Khalid, Hybrid Nanocomposites of Multi-walled Carbon Nanotubes (MWCNTs) and CuO as Electrode Materials for Energy Storage Devices, *Journal of Electronic Materials* 49 (2020) 1096-1103
- 43) M Irfan, A Shakoor, **N. A. Niaz**, N Anwar, Ghulam Ali, Optical and dielectric modulus Study of PPy-DBSA/ Y_2O_3 composites, *Journal of Materials Science: Materials in Electronics*, 31 (2020) 22365-22374
- 44) F Hussain, M Imran, RMA Khalil, **N.A. Niaz**, AM Rana, MA Sattar, M Ismail, An insight of Mg doped ZnO thin films: A comparative experimental and first-principle investigations, *Physica E: Low-dimensional Systems and Nanostructures* 115 (2020) 113658
- 45) F Hussain, M Imran, RMA Khalil, MA Sattar, **N.A. Niaz**, AM Rana, M Ismail, A first-principles study of Cu and Al doping in ZrO_2 for RRAM device applications, *Vacuum* 168(2019), 108842
- 46) **N. A. Niaz**, K Kamran, M Imran, R Hussain, MI Ghauri, A Bibi, Fabrication and characterization of multilayer $\text{HfO}_2/\text{Ag}/\text{HfO}_2$ Films, *Digest J. of Nanomaterials and Biostructures* 14 (2019), 823-830
- 47) F Hussain, M Imran, A Siddiq, RMA Khalil, AM Rana, MA Sattar, **NA Niaz**, Ab initio Study of point defects in 2D graphene layer, *Surface Review and Letters* 26 (2019), 1850142

- 48) M Irfan, A Shakoor, A Majid, N Hassam, **Niaz Ahmed**, Study of Structural, Thermal and Dielectric Modulus of PPy–DBSA–Zirconium Oxide Composites, *Russian Journal of Physical Chemistry B*, 13 (2019) 1057-1063
- 49) M. Irfan, A. Shakoor, A Majid, N Hassam, **Niaz Ahmed**, Structural and Electronic Properties of PPy-DBSA/Zirconium Oxide Composites, *Polymer Science, Series A*, 61(2019) 105-111
- 50) B Aziz, A Shakoor, AK Qureshi, K Ali, **NA Niaz**, MT Farid, I Ali, Structural, Electrical, and Magnetic Properties of Ferrite–Polymer Composites, *Journal of Electronic Materials* 47 (2018) 6437-6442
- 51) M Maqsood, S Afzal, A Shakoor, **NA Niaz**, A Majid, N Hassan, H Kanwal, Electrochemical properties of PANI/MoS₂ nanosheet composite as an electrode materials, *J of Materials Science: Materials in Electronics* 29 (2018) 16080-16087
- 52) T Bashir, A Shakoor, E Ahmed, **NA Niaz**, MS Akhtar, MR Raza, MA Malik, Polypyrrole-Fe₂O₃ Nanocomposites with High Dielectric Constant: In Situ Chemical Polymerisation, *Polymers and Polymer Composites* 26 (2018),233-241
- 53) A Javed, MF Wasiq, AM Rana, MY Nadeem, **NA Niaz**, ME Mazhar Influence of post deposition thermal annealing on the optical Characterization of Hafnia Nanofilms, *Journal of Ovonic Research*, 14 (2018), 101-112
- 54) NR Khalid, M Liaqat, MB Tahir, G Nabi, T Iqbal, **NA Niaz**, The role of graphene and europium on TiO₂ performance for photocatalytic hydrogen evolution, *Ceramics International* 44 (2018), 546-549
- 55) NR Khalid, A Majid, MB Tahir, **NA Niaz**, S Khalid, Carbonaceous-TiO₂ nanomaterials for photocatalytic degradation of pollutants: A review, *Ceramics International* 43 (2017), 14552-14571
- 56) T Bashir, A Shakoor, E Ahmed, **N.A. Niaz**, S Iqbal, MS Akhtar, MA Malik, Magnetic, Electrical and Thermal Studies of Polypyrrole-Fe₂O₃ Nanocomposites, *Polymer Science, Series A* 59 (6),(2017) 902-908
- 57) G Asghar, M Irshad, **NA Niaz**, S Nasir, MS Awan, GH Tariq, Low Loss Doped Strontium Hexa-ferrite Synthesized by WOWS Sol-Gel Method, *Digest Journal of Nanomaterials and Biostructures* 12 (2017), 797-804

- 58) M Ramzan, **N.A. Niaz**, NR Khalid, I Ahmad, T Bashir, Y Nadeem, Designing and micro characterizations of metal based tri-layers thin film device, *Journal of Ovonic Research* 13 (2017)173-178
- 59) Z Ali Shah, S S Hayat, Y Arafat, M Saeed, M Ullah and **N. A. Niaz**, Effect of Temperature on Diffusion Parameters for 2-Dimensional Copper 5-Atom Island, *Research & Reviews: Journal of Material Sciences*, 5 (2017) 9-16
- 60) NR Khalid, E Ahmed, **NA Niaz**, G Nabi, M Ahmad, MB Tahir, M Rafique, Highly visible light responsive metal loaded N/TiO₂ nanoparticles for photocatalytic conversion of CO₂ into methane, *Ceramics International* 43 (2017)6771-6777
- 61) N.R. Khalid, E. Ahmed, M. Ahmad, **N.A. Niaz**, M. Ramzan, M. Shakil, T. Iqbal A. Majid, Microwave-assisted Synthesis of Ag–TiO₂/graphene Composite for Hydrogen Production under Visible Light Irradiation, *Ceramics International*, 42(2016)18257
- 62) A. Shakoor, **N. A. Niaz**, W.khan, G. Asghar, N. R. Khalid, M. N. Rehman, T. Bashir, N. Anwer, T. Z. Rizvi, Dielectric Properties of Polypyrrole Multi-walled Carbon Nanotubes Nanocomposites, *Dig. J. of Nano. & Biostructure*, 11, (2016) 1145-1153.
- 63) M. Ahmad, E. Ahmed, M. Ikram, F. Zafar, **N.A. Niaz**, Z. Hong, A. Hafeez, ; N.R. Khalid, W. Ahmed, Preparation, Characterisation and Photocatalytic Activity of La-doped ZnO Nanopowders Synthesised using Auto-combustion, *Journal Pakistan Journal of Scientific and Industrial Research*, 59 (2016)1-10
- 64) A. Elahi, A Shakoor, M Irfan, K Mahmood, **N. A. Niaz**, M. S. Awan, T Bashir, Polypyrrole and its nanocomposites with Zn_{0.5}Ni_{0.4}Cr_{0.1}Fe₂O₄ ferrite: preparation and electromagnetic properties, *J Mater Science: Materials in Electronics*, 27(2016)6964-6973
- 65) T. Iqbal, S. Ghazal, S. Atiq, N. R. Khalid, A. Majid, **N.A. Niaz**, Influence of Manganese on Structural, Dielectric and Magnetic Properties of ZnO Nanoparticles, *Dig. J. of Nano. & Biostructure*, 11(2016) 899 – 908.
- 66) A Elahi, A Shakoor, M Irfan, **N. A. Niaz**, K Mahmood, M. S. Awan, Effect of Loading ZnNiCrFe₂O₄ Nanoparticles on Structural and Microwave Absorption Properties of Polyaniline Nanocomposites, *J. Mater Sci: Mater in Electronics*, 27(2016) 9489-9495
- 67) A. Elahi, M. Irfan, M. Munawar, M. Qasim, K. Mahmood, M. Saeed, **N. A. Niaz**, A. Shakoor, M. Ahmad, A. Ali, Study on Conductivity and Dielectric Behavior of

- Chemically Synthesized Polypyrrol Dodecylbenzene Sulfonic Acid Blended with Poly(methyl Methacrylate), *Polymer Science, Series A. Focus on Physics*, 58 (2016) 33–41.
- 68) A.Elahi, A. Shakoor, M.Irfan, **N. A. Niaz**, M. Ahmad, K. Mahmood, Effect of $\text{ZnNiCrFe}_2\text{O}_4$ Content on Structural and Dielectric Properties of Polyaniline Based Nanocomposites, Synthesized via In-situ Chemical Polymerization, *Polymer Science, Series B*, 58(2016)449–456.
- 69) N.R. Khalid, E. Ahmed, A. Rasheed, M. Ahmad, M. Ramzan, A. Shakoor, A. Elahi, S. M. Abbas, R. Hussain, **N.A. NIAZ**, Co-doping effect of Carbon and Yttrium on Photocatalytic Activity of TiO_2 Nanoparticles for Methyl Orange Degradation, *Journal of Ovonic Research*, 11(2015)107-112.
- 70) A.Elahi, **N.A. Niaz**, MS Awan, A. Shakoor, K. Mahmood, Y. Khan, Structural, electrical, and magnetic properties of polypyrrole– $\text{Zn}_{0.5}\text{Ni}_{0.45}\text{Mn}_{0.05}\text{Fe}_2\text{O}_4$ nanocomposites prepared by in situ chemical polymerization, *Polymer Science Series B*, 57 (2015) 738-749
- 71) M. Ahmad, E. Ahmed, F.Zafar, N.R. Khalid, **N.A. Niaz**, A. Hafeez, M. Ikram, M. A. Khan, Z.Lianhong, Enhanced photocatalytic activity of Ce-doped ZnO nanopowders synthesized by combustion method, *J. Rare Earths*, 33 (2015) 255-262.
- 72) M.Irfan, **N.A. Niaz**, I. Ali, S Nasir, A. Shakoor, A. Aziz, N.Karamat, NR Khalid, Dielectric behavior and magnetic properties of Mn-substituted Ni–Zn ferrites, *Journal of Electronic Materials*, 44 (2015) 2369-2377
- 73) A. Elahi, M. Irfan, A. Shakoor, **N.A. Niaz**, K.Mahmood, M.Qasim, Effect of loading titanium dioxide on structural, electrical and , mechanical properties of polyaniline nanocomposites, *J. of Alloys and Compounds* 651 (2015) 328—332.
- 74) M. Ramzan, E. Ahmed, **N.A. Niaz**, A.M. Rana, A.S. Bhatti, N.R. Khalid, M.Y. Nadeem, AFM applications to study the morphology of HfO_2 multilayer thin films, *Superlattices and Microstructures* 82 (2015) 399–405.
- 75) T. Bashir, A. Shakoor, E. Ahmad, M. Saeed, **N. A. Niaz** and S. K. Tirmizi, Structural, Morphological, and Electrical Properties of Polyaniline– Fe_2O_3 Nanocomposites, *Polymer Science, Ser. B*, 57 (2015)257–263.

- 76) A. Hakeem, M. Ramzan, E. Ahmed, A. M.Rana, N.R. Khalid, **N.A. Niaz**, M.Y.Nadeem Effect of vacuum annealing on surface and optical constants of hafnium oxide thin films, , *Material Science in Semiconductor Processing*, 30 (2015) 98-103.
- 77) S.M. Abbas, S. Ali, **N. A. Niaz**, N. Ali, R. Ahmed, N. Ahmad, Superior electrochemical performance of mesoporous Fe₃O₄/CNTs nanocomposites as anode materials for lithium ion batteries, *Journal of Alloys and Compounds*, 611 (2014) 260-266.
- 78) G. H. Tariq, **N. A. Niaz**, M.Anis-ur-Rehman, Effect of dopant's profile of physical properties of ZnTe thin films, *Chalcogenide Letter*, 111 (2014) 461-470.
- 79) M. Ikram, **N.A. Niaz**, N.R. Khalid, M. Ramzan, M. Imran, S.Ali, Tetra blended based hybrid bulk heterojunction solar cells, *Journal of Organic Research*, 10 (2014) 257-263.
- 80) A. Shakoor, **N.A. Niaz**, A. Majid, N. Hassan, M. Farooq, R. Hussain, Opto-electronic properties of poly (p-phenylenevinylene) (PPV) intercalated in CdPS₃, *Chalcogenide Letter*, 11 (2014) 351-358.
- 81) M.I. Ghouri, E. Ahmed, N.R. Khalid, M. Ahmad, M. Ramzan, A.Shakoor, **N.A.Niaz**, Gadolinium doped ZnO nanocrystalline powders and its photocatalytic performance for degradation of methyl blue under sunlight, *Journal of Organic Research*, 10 (2014) 89-100.
- 82) A. Shakoor, M. Tariq Bhatti, M. Farooq, M. Nadeem, Tahir Bashir, **N.A. Niaz**, and M. Ahmad Siddiqi, On the mechanism of conductivity enhancement in polyaniline dodecylbenzenesulphonic acid through solvent treatment, *Pensee Journal*, 76, (2014), 162-170.
- 83) **N.A. Niaz**, I. Ahmad, N. R. Khalid, E. Ahmed, S. M. Abbas, N. Jabeen, Preparation of Mg₂FeH₆ nanoparticles for hydrogen storage properties, *J. Nanomaterials*, (2013) <http://dx.doi.org/10.1155/2013/610642> .
- 84) **N.A. Niaz**, I. Ahmad, S. Nasir, Z. Wazir, R. Hussain, N. R. Khalid, S. Tajammul Hussain, Synthesis and characterization of Mg-Al alloy for hydrogen storage applications, *Dig. J. of Nano. & Bio Structure*. 8, (2013), 423 – 431.
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- 87) **N. A. Niaz**, Waheed S. Khan, S. Tajammul Hussain and Ishaq Ahmad Synthesis of nanostructured Mg-Ni alloy for hydrogen storage applications, *Journal Material Science & Technology* 5 **(2012)** 401-406.
- 88) **N.A. Niaz**, S. Tajammul Hussain, S. Nasir and I. Ahmad, Improved hydrogen desorption kinetic of MgH₂ by using TiC nano catalyst, *Key Engineering Materials*, 510-511 **(2012)** 371-377.
- 89) Waheed S. Khan, Chuanbao Cao, **N. A. Niaz**, M. Tanveer, Catalyst-Assisted Growth of Zinc Nitride Nanotowers and Their Photoluminescence Properties, *Science of Advanced Materials*, 4 **(2012)**, 1-5.
- 90) Waheed S. Khan , Chuanbao Cao ,Zulfiqar Ali , Faheem K. Butt, **N.A. Niaz**, Anisullah Baig, *Material Letter* 65 **(2011)** 2127–2129
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Publication Submitted:

- 1) Aqsa Arooj, **N.A. Niaz**, Lubna Akbar, A. Shakoor, N.R. Khalid, Effect of activated CNTs on hydrogen storage properties of MgH₂, *Synthetic materials*, under review
- 2) **N. A. Niaz**, Gongbiao Xin, JeiZheng and Xingguo Li., Effect of annealing temperature on electrical, optical and hydrogen storage properties of Pd capped Mg thin films. under review, *J. of power source*.
- 3) **N. A. Niaz**, Gongbiao Xin, JeiZheng, I. Ahmad , and Xingguo Li, Hydrogen absorption/desorption behavior of multilayer Mg-Pd thin films under mild condition, under review process, *Int. Journal of Hydrogen Energy*.

Number of Students Supervised

Ph.D.

2.1 Supervision Ph.D.

(a) Completed (01)

(b) Research Work in Progress (01)

Sr. #	Name	Year	Title	Status
1	Mr. Inam Karim	2024	Physical, Electrical and Mechanical Study of Polymer based Bitumen Composite	Completed (IUB)
2	Mr. Kashif Saleem	2019	Synthesis and Characterization of Transition metal Nitrides Composites for Electro-catalysis Applications	Research work under Progress

2.2 List of M.Phil Students

Sr. #	Name	Session	Title	Status
1	Ms. Lubna Rasheed	2012-14	<i>Synthesis and Characterization of Mg-based Thin Films for Hydrogen Storage Applications.</i>	Completed
2	Mr. Muhammad Qasim	2012-14	<i>Effect of Activated CNTs on Hydrogen Storage Properties of MgH₂</i>	Completed
3	Ms. Bushra Chaudhry	2013-15	<i>Experimental and Computational Study of CuO/CNTs Composites for Energy Applications</i>	Completed
4	Ms. Sabeeha Aslam	2013-15	<i>Effect of Copper Sulphur Co-dopant on Catalytic Activity of TiO₂ Nanoparticles</i>	Completed
5	Ms. Fouzia Ghafoor	2014-16	<i>Sstudy of Bimettalic/CNTs Composites for Sodium Ion batteries Applications.</i>	Completed
6	Ms. Tahmeena Parveen	2014-16	<i>Synthesis and Characterization of Alane Materials for Hydrogen Storage Applications</i>	Completed
7	Ms. Shazia Akhtar	2014-16	<i>Synthesis and Characterization of Transition metal Oxide Coating by PVD.</i>	Completed
8	Mr. Rehmatullah	2015-17	<i>Influence of Oxygen and Orgon Pressure Ration on Bipolar Resistive Switching Characteristics of CeO₂ Thin Films Deposited at Room Temperature</i>	Completed (AIOU)
9	Mr. Riaz Hussain	2015-17	<i>Improvement of Resistive Switching Properties in CeO₂-Based Re-RAMS by Different Metals(Al, Ti, W) Dopants</i>	Completed (AIOU)
10	Ms. Rahat Jahan	2015-17	<i>Effect of ZnNiMnFe₂O₄ Contents on Structural, Dielectric and Magnetic Properties of PANi-ZnNiMnFe₂O₄ Composites</i>	Completed (AIOU)

11	Seemab Afzal	2015-17	<i>Synthesis and Characterization of MoS₂/Polyaniline Nanocomposites</i>	Completed
12	Hira Kanwal	2015-17	<i>Preparation and Characterization of MoS₂/Polypyrrole Nanocomposites</i>	Completed
13	Muhammad Wajid	2015-17	<i>Effect of TiO₂ Nanocatalyst on Hydrogen Storage Properties of MgH₂</i>	Completed
14	Javed Ahmad	2015-17	<i>Synthesis and Characterization of ZnO/TiO₂-Polyaniline Nanocomposites</i>	Completed
15	Sumaira BiBi	2016-18	<i>Synthesis and Characterization of DBSA Doped MoS₂/PANI for Potential Applications</i>	Completed
16	Ayesha Zahid	2016-18	<i>Electrochemical Energy Storage Performance of ZnS-Polyaniline Nanocomposites</i>	Completed
17	Muhammad Umer	2016-18	<i>Synthesis and Characterization of MoS₂/Graphene Oxide Composites for Energy Storage Applications</i>	Completed
18	Zahid Nawaz	2016-18	<i>Effect of TiC on Hydrogen Storage Properties of MgH₂</i>	Completed
19	Zareen Qamar	2017-19	<i>Electrochemical Energy Storage application of DBSA Doped PPy/MoS₂ Nanocomposites</i>	Completed
20	Munazza Tariq	2017-19	<i>Synthesis and Characterization of V₂O₅/rGO Nanocomposites for Electrochemical Energy Storage Applications</i>	Completed
21	Nighat Rasheed	2017-19	<i>Synthesis and Characterization of Barium Based Spinel Ferrites</i>	Completed
22	Uzair Akhtar Bhutta	2017-19	<i>Kinematic Effect of CNTs on Hydrogen Storage Properties of MgH₂</i>	Completed
23	Shumaila Akram	2018-20	<i>To Study MgH₂ Nanostructure for Switchable Mirror Applications</i>	Completed
24	Nayab Sharif	2018-20	<i>Synthesis and Characterization of MoS₂/CNTs Composites for Li Ion Battery Applications</i>	Completed
25	Rabeya Saman	2018-20	<i>Synthesis and Electrochemical Study of CoS/rGO Composites for Energy Storage Applications</i>	Completed
26	Qurratul Ain	2018-20	<i>Synthesis and Characterization of V₂O₅/MoS₂ Nanocomposites for Photocatalytic Degradation of Organic Compounds</i>	Completed
27	Sidra Dildar	2019-21	<i>Synthesis and Characterization of Metal Oxide composite for Electrochemical Applications</i>	completed
28	Aqsa Arooj	2021-23	<i>Experimental and Computational Study of AlH₃ for Hydrogen storage Applications</i>	completed
29	Muhammad Ali	2021-23	<i>Electrochemical study of MoS₂-V₂O₅@PPy</i>	completed

			<i>Nanostructure</i>	
30	Muhammad Ismail	2021-23	<i>Synthesis and Characterization of rGO-ZnS@PANinocomposite for Electrochemical Applications</i>	completed
31	Muhammad Rashid	2021-23	<i>Computational study of Layered Pervoskite Materials for Optoelectronic Applications</i>	completed

2.3MPhil Under Supervision

1	Sadia Sheraz	2023-25	<i>Electrochemical Energy Storage Applications of MXene/PPy Composites</i>	
2	Rimsha Shahzadi	2023-25	<i>Synthesis and Characterization of MXene/MoS2 Electrocatalyst For Water Splitting Applications</i>	
3	Haram Shahzad	2023-25	<i>Synthesis and Characterization of rGO/S@PANi Cathode Materials for Li-Sulphur Batteries</i>	
4	Muhammad Arsalan	2023-25	<i>Synthesis and Characterization of rGO/Nb2O5 Nanocomposite for Electrochemical Applications</i>	
5	Aqsa Sajid	2023-25	<i>Preparation of MgCoH5 for Hydrogen Storage Applications</i>	
6	Tariq Abbas	2023-2025	<i>Effect of TiCNanocatalyst on Hydrogen storage properties of MgH2</i>	

International National/ National Conferences& Workshops Attended

1. 2nd International Conference on Emerging Trends in Physics, 6th -8th May 2024, Institute of Physics, The Islamia University Bahawalpur, Pakistan (Speaker)
2. International Conference of Collaborative Strategies of Higher Education Institutions and Industry to Promote sustainable Development Goals, The Women University Multan, Pakistan 4th -5th March 2024 (Invited Speaker)
3. 3rd International Conference Advances in Materials Science, December 15-16, 2022, Department of Physics, Education University, Lahore (Invited Speaker)

4. 2nd International Conference on Physical Science and Engineering December, 14-16, 2022, Department of Physics, Khawaja Fareed University of Engineering and Technology (Invited Speaker)
5. 5th International Conference of Material Science & Nanotechnology August 22-23, 2022 Governmet College University, Faisalabad
6. 1st International Conference on Emerging Trends in Physics, May, 22-23, 2022, Institute of Physics, Islamia University, Bahawalpur
7. The National Webinar on Modern Trends in Physics for New Avenues of Research and Development, 25th August, 2021, Department of Physics, Ghazi University, D.G. Khan, PAKISTAN (Speaker)
8. 2nd International Symposium on Modern Trends in Physics, March 17-18, 2021 Department of Physics, GCU, Faisalabad, PAKISTAN
9. International Workshop on Nanomaterials for Energy Conversion, Emerging Photovoltaic and Optoelectronics Technologies, National Centre for Physics & University of Konstanz, Konstanz Germany, October 7-9, 2019 at NCP, Islamabad, Pakistan
10. 1st International Conference on Strong Correlated Electron System and Nanotechnology, The Women University, Multan (January 15-17, 2019)
11. Awareness Seminar Technology Development Fund (TDF), Bahauddin Zakariya University, Multan 15th March 2018
12. Training Workshop on Entrepreneurship: A Silver Bullet for Personal Growth and Development, , Bahauddin Zakariya University, Multan, 24th October 2018
13. International Scientific School-2017, National Centre for Physics, & The Abdus Salam International Centre for Theoretical Physics (AS-ICTP), Trieste, Italy, March 13-17, (2017) at NCP Islamabad, PAKISTAN
14. Gravitational waves: A Spacetime Symphony, speaker Dr. Babar Ahmed Qureshi, Organized by physics Department, BZU Multan 19 May 2016.
15. Workshop on Innovative Teaching by Prof. Dr. Arshad Karim 20-02-2015
16. International Scientific Spring 2014, National Centre for Physics, Islamabad
17. Weekend Training Programs for Researchers, Industrialists, faculty members Scientists September 2014, IST, Islamabad.

18. National Training Course on “Security of Radioactive Sources” 09-13 December 2013.
19. Applications of LASER by Prof. Dr. Aslam Baig, NCP, Islamabad
20. Research Trend in Physics by Prof. Dr. Ismat Shah
21. International Scientific Spring 2013, National Centre for Physics, Islamabad
22. International Symposium on Advance materials (August 8-12 2009)
23. 34th International Nathiagali Summer College 22 June-04 July 2009
24. “1st All Pakistan Conference on Materials Technology” of American Society of Materials(ASM) International (January 25-27 2008) held at Ghulam Ishaq Khan Institute of Engineering Science and Technology(GIKI) attended as presenter.
25. 2nd International Symposium on Theoretical and Condense Matter Physics
20-24 Nov 2007 National Centre for physics QAU Islamabad
26. 3rd International Symposium on Microelectronics and semiconductor
COMSATS IIT, Islamabad (9-13 April 2007)
27. 6th International School on Thin films, Surface and nanostructures
COMSATS IIT, Lahore (25 Oct- 2 Nov- 2006)
28. 15th National & 5th International Chemistry Conference of Chemical Society of Pakistan (Nov. 24-27, 2004), Department of Chemistry, Quaid-i-Azam University Islamabad attended as participant.

Membership of Professional Societies

- 1) American Physical Society
- 2) Pakistan Physical Society
- 3) Pakistan Chemical Society

Honors and Awards

- 1) Research Productivity Awards, COMSATS, Islamabad, 2013
- 2) Talent Researcher Exchange program Award, (TREXP) British Council 2009

Additional Skills and Expertise

- Proficient in using

- X-Rays Diffractometer
- Transmission Electron Microscopy (TEM)
- Scanning Electron Microscopy (SEM)
- Raman Spectra
- FTIR (Everest ATR Thermo Scientific)
- GC (Varian model CP-3800)
- UV-Spectrophotometer model 1700 & 1601(Shimadzu)
- Electrochemical workstation (GEMRY & PalmSence4)
- Battery Testing System (LAND &Neware)
- Hydrothermal Parr 4843 Reactor
- LECO[®] CHNS analyzer
- TPDRO 1100 series (Thermo)
- Vacuum line & AACVD
- Working ability on Fixed bed and Fluidized bed catalyst testing Systems

References:

- Prof.Dr. Duncan H Gergory, WestCHEM Chair in Inorganic Materials, School of Chemistry, Joseph Black Building, University of Glasgow, Glasgow G12 8QQ, UK
Email: Duncan.Gregory@glasgow.ac.uk
Phone : +44 (0) 141 330 8128
- Prof. Dr. Abdul Majid, Chairman Department of Physics, University of Gujrat, Hayat Abad Campus, GUJRAT
Phone : +923328009610
Email: abdulmajid40@yahoo.com
- Prof.Dr. Ishaq Ahmad, Department of Physics, COMSATS Institute of Information Technology, Islamabad, Pakistan.
Phone : +923015249196
E.mail: lshaq@comsats.edu.pk