GHULAM MUSTAFA
Assistant Professor, Department of Physics
NED University of Engineering & Technology
Ph: +92-99261261-268 Ext. (2601)
E-mail: gmkhan@neduet.edu.pk,

A EDUCATION

- **PhD (Physics) 2025**
  University of Karachi, Pakistan.
- **M.Phil. (Physics) 2016**
  University of Karachi, Pakistan.
- **M.Sc (Physics) 1998**
  University of Sindh, Jamshoro
- **B.Sc. (Honors) 1997**
  University of Sindh, Jamshoro

. B PROFESSIONAL EXPERIENCE

- NED University of Engineering & Tech. Karachi Pakistan
  Assistant Professor 2025 -to date
- NED University of Engineering & Tech. Karachi Pakistan
  Lecturer 2010-2025
  Develop Syllabus and Labs, Administer Labs, Supervise Master's Thesis
- DR A.Q. Khan Research Laboratories Rawalpindi
  Scientific Officer 2009-2010
  R&D work in Vacuum Science and Technology
- NED University of Engineering & Tech. Karachi Pakistan
  Lecturer 2008 - 2009
- Collegiate Branch, Education and Literacy Department, Govt. of Sindh
  Lecturer 2002-2008

C Teaching Experience

1. Theory classes of F.E (B.E program) and third year and final year of BS Physics program.
2. Practical classes of F.E (B.E program) and third year and final year BS physics labs.
3. Postgraduate Teaching in MS physics program.

D Administrative Experience

1. Resource person for commercial activity in Physics Department
2. FYDP coordinator (2016 to till date)
3. Member FYDP review committee
4. ORIC Departmental Representative
5. Lab-Incharge (2010 to till date)

6. Class Advisor of Final Year (2015 to 2020)
7. Member of Technical Evaluation Committees.
8. Convener of Technical Evaluation Committee (Mega-4 Project Procurement of Lab equipment for BS Physics labs)
9. Factotum in Semester Exams.
10. Installation of Lab equipment.
11. Member of Examination review committee.
12. Member of MS and BS program committee.
13. LMS Coordinator
14. Head of Sponsor Committee ICAPE-2021

E. Research Activities

(i) Undergraduate and Postgraduate Research Supervision:

Degree / Role	Successfully Supervised	Successfully Co-supervised	Currently Supervising	Currently Co-Supervising
BS	15	8	-	02
Master's Thesis	10	06	03	-

(ii) Research Interest/Activities

- Crystal structure Analysis by X-ray diffractometry
- Fourier Transform Infrared Spectroscopy
- Dielectric Properties by Impedance Spectroscopy
- Magnetic Properties by Vibrating Sample Magnetometer
- Morphology Analysis of Nanomaterials by SEM.
- Design, Development of Oil Mist Eliminator and Testing of its Effectiveness for Clean Environment.
- Degassing rate and Total mass loss of PCBs for Vacuum compatibility.
- Branching Fractions of Pr atom by analyzing Fourier Transform Spectrum.
- Structural, spectroscopic, dielectric and Magnetic Properties of Spinel Ferrite nanomaterial.
- Crystallinity measurement of Starch and semi-crystalline materials.
- Soiling Issue and its solution in pole mounted Solar Panels.

(iii) Awards

- Best Teacher Award 2019 (NED Alumni Association of Southern California, USA)
- Best Researcher Award 2020 ((NED Alumni Association of Southern California, USA)
- Best FYDP for showcase 2021 (Department of Physics, NED UET)
- Best Researcher Award 2021 (NED University of Engineering & Technology)

- Best Researcher Award 2022 (NED University of Engineering & Technology
- Sultana N. Nahar Prize (2023-24) for Distinction in Research Publications and in Research guidance in Physics
- 10 Financial Reward for publishing research paper in JCR Journals (NED University of Engineering & Technology)
- Research Poster Award at Qatar Annual Research Forum and Exhibition-2023

(iv) Community Work

- Member of Pakistan Vacuum Society
- Treasurer NETA
- Member Technical Committee for Terminology, Nomenclature, Abbreviation, Preferred Numbers, Principles, Administrative, Problems and Metrological Controls at Pakistan Standards & Quality Control Authority.

LIST OF PUBLICATIONS

1. Zehra, N., Ali, T. M., & **Mustafa, G.** (2024). Impact of hydroxypropylation coupled with extrusion treatment on the morphological, structural, and rheological properties of sorghum and corn starch. International Journal of Biological Macromolecules, 277, 134173. **(I.F:7.7, Q1, HEC-W, SCIE)**

2. Nadeem, S., Muhbat, S., Zakaria, K., & **Mustafa, G**. (2024). Arduino Controlled Catalytic Pyrolysis of Plastic/Municipal Waste to Higher Hydrocarbons. Journal of the Chemical Society of Pakistan, 46(2). **(I.F: 0.6, Q4, HEC-Y, SCIE)**

3. Quddus, A., Hashmi, S. Z. H., **Mustafa, G**., Khalid, M., Ashiq, M. G. B., Nazir, G., ... & Naz, K. (2023). Sol-Gel synthesis of Ni-doped Zn-based spinel nanoferrites with structural and dielectric characterizations along with magnetic analysis. Colloids and Surfaces A: Physicochemical and Engineering Aspects, 676, 132074. **(I.F: 4.9, Q2, HEC-W, SCIE)**

4. Hashmi, S. Z. H., Khalid, M., **Mustafa, G**., Ashiq, M. G. B., Younas, M., Quddus, A., ... & Javid, M. M. (2023). Synthesis of Nickel-doped Magnesium spinel ferrites (NixMg1-xFe2O4) nanomaterials and study of their structural, electrical and magnetic properties. Materials Chemistry and Physics, 305, 127912. **(I.F: 4.3, Q2, HEC-W, SCIE)**

5. **Mustafa, G**., Khalid, M., Khan, J. K., Uddin, Z., Ashiq, M. G. B., & Somaily, H. H. (2023). Lanthanum doped Manganese-Zinc spinel ferrite nanoparticles for microwave and soft magnet applications. Journal of Materials Science: Materials in Electronics, 34(4), 249. **(I.F: 2.8, Q2, HEC-W, SCIE)**

6. Hafeezullah, M. M., Rafay, A., **Mustafa, G**., Khalid, M., Kalhoro, Z. A., Shaikh, A. W., & Rajput, A. A. (2023). Prediction of Viscosity of Cobalt Ferrite/SAE50 Engine Oil based

Nanofluids using well Trained Artificial Neutral Network (ANN) and Response Surface Methodology (RSM). East European Journal of Physics, (3), 479-489. **(I.F: 1.0, Q3, HEC-Y, ESCI)**

7. Naqvi, S. A. A., **Mustafa, G**., Khan, J. K., Raza, S. M., Faraz, S., & Uddin, Z. (2022). Synthesis, morphology and optical characterisation of transition metal oxide (Mn3O4) nanostructures and its antibacterial activities. International Journal of Nanotechnology, 19(12), 1093-1104. **(I.F: 0.3, Q4, HEC-Y, SCIE)**
8. Khan, J. K., Khalid, M., **Mustafa, G**., Uddin, Z., Saleem, M., & Azam, A. A. (2022). Study of lanthanum ions (La3+) doped Manganese-Cobalt (Mn-Co) based spinel ferrite nanoparticles for technological applications. Applied Physics A, 128(11), 961. **(I.F: 2.5, Q2, HEC-X, SCIE)**
9. Zehra, N., Mohsin Ali, T., **Mustafa, G**., & Hasnain, A. (2022). Characterization of Citric Acid Treated Partially Cold-Water Swellable Sorghum and Corn Starch Extrudates; A Green Approach. Starch-Stärke, 74(9-10), 2100291. **(I.F: 2.6, Q2, HEC-X, SCIE)**
10. Ahmad, J., Khalid, M., **Mustafa, G**., AlObaid, A. A., Al-Muhimeed, T. I., Akhtar, M. S., ... & Abd-Rabboh, H. S. (2021). A facile strategy for the preparation of bismuth ferrite nanoparticles: Influence of calcination temperature on structural, dielectric, and morphological characteristics. Colloids and Surfaces A: Physicochemical and Engineering Aspects, 628, 127328. **(I.F: 4.9, Q2, HEC-W, SCIE)**
11. Muniba, Khalid, M., Chandio, A. D., Akhtar, M. S., Khan, J. K., **Mustafa, G**., Channa, N. U., ... & Asghar, H. N. U. H. K. (2021). Aluminum substitution in Ni-Co based spinel ferrite nanoparticles by sol–gel auto-combustion method. Journal of Electronic Materials, 50, 3302-3311. **(I.F: 2.2, Q3, HEC-X, SCIE)**
12. Faiza Shaikh, Tahira Mohsin Ali, **Ghulam Mustafa**, and Abid Hasnain. Comparative Study on the Effects of Citric Acid Modification and Hydroxypropylation on the Physiochemical and Digestibility Characteristics of Acid-Hydrolyzed Corn and Sorghum Starches. Starch-Stärke 2021, 2000241-Wiley Online Library. DOI: 10.1002/star.202000241. **(I.F: 2.6, Q2, HEC-X, SCIE)**
13. Channa N, Khalid M, Chandio AD, Akhtar MS, Khan JK, **Mustafa G**, Gilani ZA. Structural, dielectric, impedance, and electric modulus properties of Cu 2+-substituted Cu x Mn 1-x Fe 2 O 4 spinel ferrites nanoparticles. Journal of Materials Science: Materials in Electronics. 2021 Feb 6:1-3. **(I.F: 2.8, Q2, HEC-W, SCIE)**
14. Faiza Shaikh, Tahira Mohsin Ali, **Ghulam Mustafa**, and Abid Hasnain. Comparative Study on Effects of Xanthan Gum at Different Concentrations on the Functional, Thermal, and Digestibility Characteristics of Corn and Sorghum Starch Extrudates. Starch-Stärke 2020, 2000206 - Wiley Online Library. DOI: 10.1002/star.202000206. **(I.F: 2.6, Q2, HEC-X, SCIE)**

15. Junaid Kareem Khan, Muhammad Khalid[3], Ali Dad Chandio[4], Kiran Shahzadi1 Zaheer Uddin[2], **Ghulam Mustafa[1,2]**, Muhammad Saeed Akhtar[5], Naimat Ullah Channa[6], Zaheer Abbas Gilani[3]. Properties of Al^{3+} substituted nickel ferrite ($NiAl_xFe_{2-x}O_4$) nanoparticles synthesised using wet sol-gel auto-combustion. Journal of Sol-Gel Science and Technology. https://doi.org/10.1007/s10971-020-05426-5. 11 November 2020 © Springer Science+Business Media, LLC, part of Springer Nature 2020 **(I.F: 2.05, Q2, HEC-X, SCIE)**

16. Faiza Shaikh, Tahira Mohsin Ali, **Ghulam Mustafa**, Abid Hasnain. Structural, functional and digestibility characteristics of sorghum and corn starch extrudates (RS3) as affected by cold storage time. International Journal of Biological Macromolecules. https://doi.org/10.1016/j.ijbiomac.2020.08.105. **(I.F: 5.6, Q1, HEC-W, SCIE)**

17. Ghulam Mustafa. Muhammad Khalid. Ali Dad Chandio. Kiran Shahzadi. Zaheer Uddin. Junaid Kareem Khan. Naimat Ullah Channa. Zaheer Abbas Gilani. H. M. Noor ul Huda Khan Asghar. Dielectric, impedance, and modulus spectroscopic studies of lanthanum-doped nickel spinel ferrites $NiLaxFe_{2-x}O_4$ nanoparticles. Journal of Sol-Gel Science and Technology. https://doi.org/10.1007/s10971-020-05359-z . 29 June 2020 © Springer Science+Business Media, LLC, part of Springer Nature 2020. **(I.F: 2.05, Q2, HEC-X, SCIE)**

18. Kiran Shahzadi, Ali Dad Chandio, **Ghulam Mustafa,** Muhammad Khalid, Junaid Kareem Khan, Muhammad Saeed Akhtar, Zaheer Abbas Gilani, H. M. Noor ul Huda Khan Asgar. Impact of aluminum substitution on the structural and dielectric properties of Ni–Cu spinel ferrite nanoparticles synthesized via sol–gel route. Optical and Quantum Electronics (2020) 52:190 https://doi.org/10.1007/s11082-020-02304-w. **(I.F: 1.61, Q2, HEC-X, SCIE)**

19. Naimatullah Channa, Muhammad Khalid, Ali Dad Chandio, **Ghulam Mustafa**, Muhammad Saeed Akhtar, Junaid Kareem Khan, Jamshed Ahmad, Kashif Ali Kalhoro. Nickel-substituted Manganese Spinel Ferrite nanoparticles for high-frequency applications. Journal of Materials Science: Materials in Electronics https://doi.org/10.1007/s10854-019-02684-0. Springer Science+Business Media, LLC, part of Springer Nature 2020. **(I.F: 2.22, Q2, HEC-W, SCIE)**

20. M. Khalid, J. K. Khan, **G. Mustafa**, M. S. Akhtar, Z. A. Gilani, H. M. N. ul Huda Khan Asghar, S. Riaz, S. Naseem. Design and Analysis of normally on 4h sic vertical junction field effect transistor (vjfet) using sentaurus TCAD simulation. Journal of Ovonic Research. Vol. 15, No. 5 September – October 2019, p. 335 – 343. **(I.F: 0.68, Q4, HEC-Y, SCIE)**

21. Faiza Shaikh, Tahira Mohsin Ali, **Ghulam Mustafa**, Abid Hasnain. Comparative study on effects of citric and lactic acid treatment on morphological, functional, resistant starch fraction and glycemic index of corn and sorghum starches. International Journal of Biological Macromolecules 135 (2019) 314–327.
(I.F: 5.16, Q1, HEC-W, SCIE)

22. Muhammad Khalid, Saira Riaz, Junaid K. Khan, **Ghulam Mustafa** and Shahzad Naseem. Optimization Of Breakdown Voltage Characteristics in Normally-Off 4h-Sic Vjfet Using Sentaurus Tcad Simulation", Science International, 7595766484019-4022(Sep-Oct,2015).

CONFERENCES/ SYMPOSIA

1. Effect of Ce^{3+} doping on structural, magnetic, and electrical properties of Manganese-Zinc (Mn-Zn) mixed spinel ferrite nanoparticles. Paper presentation in 1st International Conference on Innovations in Chemistry and Physics ICP-2022. (Department of Chemistry & Physics, University of Education, Faisalabad Campus)

2. Effect of La doping on structural and magnetic properties of manganese-zinc (Mn-Zn) based spinel ferrites nanoparticles. Paper presentation in International Conference on Applied Physics & Engineering ICAPE-2021. (2021, Department of Physics, NED UET Karachi)

3. New Values of Branching Fractions of Pr II Levels. Paper Presentation in the '4th National Conference on Space Science and Technology', World Space Week, Institute of Space and Planetary Physics, University of Karachi (October 7-8-9, 2016)

4. Branching Fractions of atomic Praseodymium Pr (I) by analyzing Fourier Transform Spectrum. Poster Presentation at "KPS 1st Conference on Multi-Disciplinary Topics in Physics" Department of Physics, University of Karachi (February 12-13, 2016).

5. Design, Development of Oil Mist Eliminator and Testing of its Effectiveness for Clean Environment. Poster Presentation at International Spring Scientific Conference at NCP Islamabad (2-6 March 2010).

BOOKS

1. M.Phil. Thesis "Branching Fractions of atomic Praseodymium PR-I. (Oct-2016)
2. PhD Thesis "Study of Rare Earth Ions Doped Manganese Zinc (Mn-Zn) Based Spinel Ferrites.

CERTIFICATE AND TRAININGS

1. Participated in "1st specialized course of teaching skills for lecturer" at National Institute of Public Administration, Karachi. 24 June to 20 July, 2002.
2. Seminar on "Paper Setting and Quality Assessment". Board of Intermediate Education Karachi. September 17-19, 2005.
3. 4-day workshop "Activity Based Physics Teaching" Sponsored by HEC, held at Federal Urdu University of Arts, Sciences and Technology Karachi. April 16-21, 2007.
4. International Conference, "Physics and the World of Today". December 18-20, 2008.
5. Participated in five days' workshop on Vacuum Science and Technology (WSVT‐2) at National Institute of Vacuum Science and Technology, NCP Islamabad. Dec 14-18, 2009.
6. Training Workshop "Disaster Risk Management" NED University of Engineering and Technology. September 20-21, 2011.
7. HEC Indigenous On Campus Training on "Presentation Skills". September 1-5, 2014.

List of MS Thesis Supervision

1. Effect of Transition Metals (M = Cu, Zn, Co) substitution on Structural, Electrical, and Magnetic Properties in Nickle-Magnesium (Ni-Mg) Ferrites. (Sherish Inam).

2. Study of structural, electrical, and magnetic properties of Copper-Magnesium (Cu-Mg) ferrite materials ($M_xCu_{(0.5-x)}Mg_{(1-2x)}Fe_2O_4$) upon transition metals (M = Ni, Zn, Co) substitution. (Manoj Jethwa)
3. The impact of divalent metals (Co,Zn,Cu) substitution on structural & physical properties of aluminum substituted Magnesium nano Ferrites ($M_xNi_{0.5-x}Mg_{0.5}\ Fe_{1.8}Al_{0.2}O_4$). (Syed Fasahat Batool)
4. Study of Transition Metals (M = Ni, Cu, Co) Substitution on Structural, Electrical & Magnetic Properties of Aluminum doped Zinc-Magnesium (Zn-Mg) Mixed Spinel Ferrites. (Farhan Razzak)
5. The Synthesis and Characterization of (Ni, Zn and Cu) Substituted Cobalt-Magnesium (Co-Mg) based spinel ferrites nanoparticles prepared by Sol-gel auto-combustion technique. (Nadeem Hussain)
6. Fabrication and characterization of Lanthanum doped Nickel-cobalt-zinc based spinel ferrite ($Ni_{0.4}Co_{0.4}Zn_{0.2}$) $La_xFe_{2-x}O_4$ Nanomaterial for technological applications. (Abdul Rafay)
7. Exploring Aluminum-Doped Magnesium-Manganese Spinel Ferrite: Synthesis High Frequency Charactetrzation and Advanced Applications. (Muhammad Anus)
8. Synthesis and Characlerization of Manganese Doped Nickel-Cobalt Based Spinel Ferrite ($Mn_x\ Ni_{1-x}$)0.7 $Co_{0.3}\ Fe_2O_4$ Nanomaterials for Technological applications (Sheikh Muhammad Tahir)
9. Dielectric, impedance and electric modulus spectroscopy study of $CuFe_2O_4$/ (MWCNTs) nanocomposites for high frequency devices. (Zohaib)
10. Studies of structural, magnetic and dielectric properties of Cobalt-doped $Ni_{0.7-x}Zn_{0.3}Al_{0.1}Fe_{1.9}O_4$ nanoparticles (Haider)