

# Junaid Kareem Khan

Citizenship : Pakistan • Date of Birth : 29 Oct, 1983

## Contact

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## Address:

House No.01, Street No.03, Area 2-A, Landhi Town No.03, Karachi-75160, Pakistan.

## Profile:

**Objective:** To be a part of a progressive institution that gives me a scope to update my knowledge and skills in accordance with the changing technologies and be a part of a team that dynamically works towards growth of technology to benefit the society.

## Education:

January 2025	<b>Ph.D. in PHYSICS (Material Science)</b> University of Karachi, Karachi Pakistan.
February 2016	<b>M.Phil. ISPA</b> University of Karachi, Karachi Pakistan.
December 2006	<b>M.Sc. Applied Physics (Electronics)</b> <b>GOLD MEDALIST</b> & <b>"1<sup>st</sup>"</b> Position in M.Sc. Electronics. University of Karachi, Karachi Pakistan.
December 2003	<b>Bachelor of Computer Science</b> University of Karachi, Karachi Pakistan.
October 2001	<b>F.Sc. (Pre- Engineering)</b> Karachi Intermediate Board, Karachi Pakistan.
March 1999	<b>Matriculation (Science)</b> Karachi Matric Board, Karachi Pakistan.

## Teaching Experience:

➤ Presently working as regular <b>"Assistant Professor"</b> in Department of Physics, NED University of Engineering and Technology, Karachi, Pakistan.	<b>Full-time</b> <b>13<sup>th</sup> March 2018 to till Date</b>
➤ Regular <b>"Lecturer"</b> in Physics in Department of Physics NED University of Engineering and Technology, Karachi, Pakistan.	<b>Full-time</b> <b>7<sup>th</sup> January 2008 to 12<sup>th</sup> March 2018</b>

## Awards/ Achievements/Activities

- Best Researcher Award 2022 from Alumni Association South California (NEDAASC)
- Best Research Publication Award 2022 from Sultana N. Nahar Prize
- Member of panel Judges in “Intra Colligate STEAM Exhibition” (2024)
- Participation as subject specialist in ECRDC for PEC for Natural Sciences (2019)
- Participation in Sindh HEC ORIC project showcase (2022)
- Reviewer of international journal: “Journal of Sol-Gel Science and Technology” (2024)
- Reviewer of international journal: “Brazilian Journal of Physics” (2024)
- Reviewer of international journal: “Physica B: Condensed Matter” (2023)
- Worked as IT Head in “1<sup>st</sup> International Conference on Applied Physics and Engineering (Sep,2021)
- Presented proposal to HEC for “National Center of GIS and Space Applications” a part of project. (2019)

### Major Responsibilities/ Experiences During Service:

- Teaching of Physics Courses at Postgraduate and Undergraduate Levels:
  - Nanoscience and Nanotechnology
  - Electromagnetic Field-II
  - Advanced Computational Physics
  - Magnetic Properties of Materials
  - Computational Physics
  - Electromagnetic Theor-I & II
  - Mechanics and Properties of matter
  - Applied Physics
  - General Physics
- Postgraduate Coordinator
- Area Coordinator (QEC)
- Class Advisor
- In-charge of Physics Lab-II
- Learning Management System Facilitator (LMSF) (During covid Period)
- Focal Person of the departmental maintenance
- Website Content Manager
- Member of Board of Faculty (BoF)-ASC
- Member /Secretary of Board of Studies (BoS)-Physics
- Member /Secretary of Industrial Advisory Board (IAB)
- Member of HSE Committee
- SAR Program Team (PT) Member for undergraduate programme
- SAR Program Team (PT) Member for postgraduate programme
- Member of Admission Committee (Ph.D. in Physics)
- Member of Admission Committee (MS in Physics)
- Member of proposal evaluation committee (MS in Physics)

### Equipment / Softwares Skills

- Working experience of Nicolet IS50 FTIR Machine
- Four Point Probe Resistivity Measurement Machine
- Phywe XRD 4.0 Machine
- Wien2k Simulation Software
- Programming Languages

### Current Research Activities:

- Nanoparticles deposited supercapacitor electrode fabrication and testing for enhancement in charge storage capacity and cyclic performance.
- Synthesis of ferrites nanoparticles for different technological applications like: Microwave, magnetic Storage, energy storage, etc.
- Study of Structural, Spectroscopic, Dielectric, and magnetic properties of nanomaterials using X-Ray Diffractometer (XRD), Scanning Electron Microscopy (SEM), Fourier Transform Infrared Spectroscopy (FTIR), Impedance Spectroscopy (IS), Four Probe testing and Vibrating Sample Magnetometer (VSM) testing.

### Major Fields of Interest for Research

- Material Science
- Renewable Energy
- Electronics

### Publications

#### Journal Publications:

1. Structural, dielectric and Magnetic properties of Samarium doped (Ni–Zn) based Spinel Ferrite ( $\text{Ni}_{0.5}\text{Zn}_{0.5}\text{Sm}_x\text{Fe}_{2-x}\text{O}_4$ ) nanomaterials, *Ceramics International* 50, no. 21 (2024): 43947-43960.
2. Physical properties of  $\text{Pr}^{3+}$  substituted zinc spinel ( $\text{ZnPr}_x\text{Fe}_{2-x}\text{O}_4$ ) nanoferrites synthesized via sol-gel auto-combustion route," *Inorganic Chemistry Communications* 168 (2024): 112856.
3. Dielectric, impedance, and modulus spectroscopic studies of cerium-doped zinc spinel ferrite  $\text{ZnCe}_x\text{Fe}_{2-x}\text{O}_4$  nanoparticle," *Journal of Materials Science: Materials in Electronics* 34, no. 18 (2023): 1439.
4. Synthesis, morphology and optical characterisation of transition metal oxide ( $\text{Mn}_3\text{O}_4$ ) nanostructures and its antibacterial activities, *International Journal of Nanotechnology* 19, no. 12 (2022): 1093-1104.
5. Lanthanum doped Manganese-Zinc spinel ferrite nanoparticles for microwave and soft magnet applications, *Journal of Materials Science: Materials in Electronics* 34, no. 4 (2023): 249.
6. Study of lanthanum ions ( $\text{La}^{3+}$ ) doped Manganese-Cobalt (Mn-Co) based spinel ferrite nanoparticles for technological applications, *Applied Physics A* 128, no. 11 (2022): 1-15. **(I.F. 2.983)**
7. Structural, dielectric, impedance and electric modulus analysis of Ni substituted copper spinel ferrites nanoparticles for microwave device applications, *Materials Chemistry and Physics* 285 (2022): 126091. **(I.F. 4.094)**
8. Effect of nickel substitution on structural and dielectric properties of Mg-Zn based spinel ferrite nanoparticles, *Physica Scripta* 97, no. 6 (2022): 065802. **(I.F. 3.081)**
9. Fabrication of Cobalt Ferrite Nanoparticles with a Facile Approach: Variations in Structural, Dielectric and Morphological Properties by Influence of Annealing Temperature, *International Journal of Nanoelectronics & Materials* 15, no. 1 (2022). **(I.F. 0.82)**
10. Structural and magnetic properties of Co–Cd–Zn spinel ferrite nanoparticles synthesized through micro-emulsion method. *Optical and Quantum Electronics* 53, no. 12 (2021): 1-12. **(I.F. 2.18)**

11. Aluminum Substitution in Ni-Co Based Spinel Ferrite Nanoparticles by Sol–Gel Auto-Combustion Method. *Journal of Electronic Materials* 50, no. 6 (2021): 3302-3311. **(I.F. 1.18)**
12. Structural, dielectric, impedance, and electric modulus properties of Cu<sup>2+</sup>-substituted Cu<sub>x</sub>Mn<sub>1-x</sub>Fe<sub>2</sub>O<sub>4</sub> spinel ferrites nanoparticles. *Journal of Materials Science: Materials in Electronics*. 2021 Feb 6:1-3. **(I.F: 2.2)**
13. Properties of Al<sup>3+</sup> substituted nickel ferrite (NiAl<sub>x</sub>Fe<sub>2-x</sub>O<sub>4</sub>) nanoparticles synthesized 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)**
14. Dielectric, impedance, and modulus spectroscopic studies of Lanthanum-doped nickel spinel ferrites NiLa<sub>x</sub>Fe<sub>2-x</sub>O<sub>4</sub> nanoparticles. *Journal of Sol-Gel Science and Technology*. (2020): 1-12. <https://doi.org/10.1007/s10971-020-05359-z> **(I.F: 2.05)**
15. 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)**
16. Nickel substituted Manganese Spinel Ferrites nanoparticles for High Frequency Applications, *Journal of Materials Science: Materials in Electronics* 1-11,2019. **(I.F: 2.22)**
17. Design and Analysis of Normally-On 4H-SiC Vertical Junction Field Effect Transistor (VJFET) Using Sentaurus TCAD Simulation. *Journal of Ovonic Research* Vol 15(5): 335-343 (Oct., 2019) **(I.F: 0.68)**
18. A Simulation Model Approach to Analysis of High Breakdown Voltage in Normally-off 4H-SiC Vertical Junction Field Effect Transistor, *Journal of Ovonic Research* Vol 14(6): 459 - 465 (Nov., 2018)
19. Optimization of Breakdown Voltage Characteristics in Normally-off 4h-Sic VJFET Using Sentaurus TCAD Simulation, *Science International*, 7595766484019-4022(Sep-Oct,2015).
20. Determination of Weibull Parameter by Four Numerical Methods and Prediction of Wind Speed in Jiwani (Balochistan), *Journal of Basic & Applied Sciences*, Volume 11, P-62-68 (2015)
21. Assessment of Wind Energy Potential for Small Scale Power Generation at Thatta, Sindh, Pakistan. *Journal of Basic and Applied Sciences*. 2015 Mar 9;11:261-4.
22. Comparison of wind energy potential for coastal locations: Pasni and Gwadar. *Journal of Basic and Applied Sciences*. 2015 Mar 5;11:211-6.

#### Conference Publications:

1. “Study of Neodymium ion (Nd<sup>3+</sup>) doped Manganese-Cobalt (Mn-Co) mixed spinel ferrite nanoparticles for dielectric and magnetic applications.”, *International Conference on Innovation in Chemistry and Physics (ICP-2022)*
2. “Study of Structural, and Magnetic Properties of Copper-Magnesium (Cu-Mg) Nano-Ferrite Materials (M<sub>x</sub>Cu<sub>(0.5-x)</sub>Mg<sub>(1-2x)</sub>Fe<sub>2</sub>O<sub>4</sub>) upon Transition Metals (M = Ni, Zn, Co) Substitution”, *1<sup>st</sup> International Conference on Applied Physics & Engineering 2021*, ICAPE21-O52-25.
3. “Study Of Co-Ni Based Ferrites with Metal Ions Substitution for Microwave Application”, *1<sup>st</sup> International Conference on Applied Physics & Engineering 2021*, ICAPE21-O55-27.
4. “Effect of La<sup>3+</sup> doping on Structural and Magnetic Properties of Manganese-Zinc (Mn-Zn) Mixed Spinel Ferrites Nanoparticles”, *1<sup>st</sup> International Conference on Applied Physics & Engineering 2021*, ICAPE21-O91-29.
5. ” Structural and Magnetic Properties of Sol-Gel Fabricated Lanthanum-Dopped Mn-Co Based Ferrites Nanoparticles” ,*1<sup>st</sup> International Conference on Applied Physics & Engineering 2021*, ICAPE21-O89-30.

## Conference, Workshop and Training Participations

1. World Space Week 2022 (4-10 October 2022)
2. Sindh HEC Research & Technology Showcase 2022 (19 May 2022)
3. International Conference on Innovations in Chemistry and Physics (March 2022)
4. International School on Physics & Allied Disciplines (ISPAD) – 2022 (14-18 March 2022)
5. World Space Week 2021 (4-10 October 2021)
6. 1<sup>st</sup> International Conference on Applied Physics and Engineering (ICAPE-2021) (16-17 Sep,2021)
7. Workshop on Technical Computing with MATLAB, NED UET Karachi (06-08 April,2015)
8. Conference "INSC-37"(Nathiagali) (2012)
9. 2<sup>nd</sup> School on LHC Physics in National Center for Physics, Islamabad (25 April-04 May,2011)
10. Workshop on Nanotechnology
11. 3<sup>rd</sup> conference on Physics as World today (2011)
12. 2<sup>nd</sup> conference on Physics as World today (2009)
13. First international Conference on Physics as World Today (2008)

## MS Thesis Supervised/Co-supervised

1. Fabrication of CNTs Decorated Manganese Based Spinel Ferrite Nanocomposites for Supercapacitor Application.
2. Fabrication and Characterization of MgFe<sub>2</sub>O<sub>4</sub>/(MWNT) composites for energy storage devices. (Sana)
3. Synthesis of Ia-doped Zn-Mg based spinel ferrite nanomaterials for supercapacitor electrode applications. (Bilal)
4. Synthesis and characterizations of Al-doped Mg-Zn based spinal ferrite nanomaterials for energy storage applications. (Azam)
5. Structural, dielectric and magnetic properties of Aluminum doped (Ni-Co-Mn) based spinel ferrites materials for energy storage applications. (Khalid)
6. Synthesis and Characterization of Praseodymium Doped (Ni-Mn-Co) Based Spinel Ferrite Ni<sub>0.4</sub>Mn<sub>0.2</sub>Co<sub>0.4</sub>Pr<sub>x</sub>Fe<sub>2-x</sub>O<sub>4</sub> Nanoparticles for High-Frequency Device Applications. (Faizan)
7. Synthesis and Characterization of Cerium Doped Strontium Hexaferrite Nanoparticles through sol-gel Method. (Waqar)
8. Free Energy Generation Using Flywheel Mechanism. (Areeba)
9. Study the effects of transition metal ions substitutions on structural, electrical and magnetic properties of Mn<sub>0.5</sub>Co<sub>0.5</sub>Fe<sub>2</sub>O<sub>4</sub> (Noor Alam)
10. Study the effects of divalent ion (Cu, Zn and Mn) substitution on the physical properties of (Ni<sub>0.5</sub>Co<sub>0.5</sub>Fe<sub>1.8</sub>Cr<sub>0.2</sub>O<sub>4</sub>) inverse ferrites. (Samee)
11. Analysis and Construction of Thermal Images Using Enhanced Detection Techniques with Thermopile Array. (Usama)
12. Development of Independent Monitor Unit (MU) Calculation for Eclipse AAA Model. (Oneza)
13. Evaluation of a 3D printed, Inhomogeneous, Anthropomorphic, Head and Neck Water Phantom using Film Dosimetry. (Mohsin)
14. 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)

15. Characterization of Sol-Gel Fabricated Cobalt-Nickle Ferrite  $\text{CoNiFe}_2\text{O}_4$  Nanoparticles by the Substitution Transition Metals (M= Cu, Zn, Mn) in Cobalt-Nickle (Co-Ni) Ferrites. (Vardah)  
Synthesis and characterization of  $\text{Ni}^{+2}$  doped Mg-Zn based Spinel Ferrite nanoparticles for high density storage. (Sibtain)

### Final Year Projects Supervised/Co-supervised

1. Development and characterization of Manganese- Cobalt bases metal oxides (MCMO) electrodes for supercapacitors.
2. Fabrication of samples of natural fibres and comparative study of their acoustical properties
3. Development and Characterization of Manganese-Zinc Based Metal Oxide (MZMO) Electrodes for Supercapacitors.
4. Multiple Membrane Based Ion Exchange Module Utilization to Recover Caustic from Industrial Waste.
5. Lithium-Ion Cells Characterization and Testing Device.
6. Designing of Ion Exchange Membrane Module for Caustic Recovery from Mercerization Waste.
7. Coronal Holes High Speed Streams (CHSS) Effects on the Sonmiani Geomagnetic Field During Solar Cycle 23 And 24.
8. Construction of Noise Reduction Filters using Enhanced Detection Techniques in Thermal Infrared System.
9. Synthesis and Characterization of  $\text{Al}^{+2}$  Doped Strontium Hexa-Ferrite Nanoparticle by Sol-Gel Method.
10. Synthesis & Characterization of Copper Substituted Cobalt Ferrite Nanoparticles by Sol-Gel Auto-Combustion Method.
11. Synthesis & Characterization of Magnesium Based Spinel Ferrites with Nickel Doped by Sol Gel Auto-Combustion Method.
12. Synthesis and Characterization of  $\text{Zn}^{+2}$  Substituted Barium Hexa Ferrite Nanoparticles Using Sol-gel Auto-Combustion Method.
13. Synthesis, Doping and Characterization of  $\text{BiFeO}_3$  Nanoparticles Using Sol-Gel Method.
14. Preparation and Characterization of  $\text{Cr}^{+3}$  doped  $\text{BiFeO}_3$  nanoparticles.
15. Aurdino Based Vehicle Tracking System and Accident detection.
16. Self-Balancing and Line Following Vehicle

### Personal Information

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|------------------|----------------------|
| ➤ Father's Name: | Jalal Uddin Khan     |
| ➤ C.N.I.C.:      | 42201-6509820-5      |
| ➤ Domicile:      | Karachi East (Sindh) |