

**Dr.Madiha Khan**

Date of birth: [REDACTED] | Nationality: [REDACTED] | Phone number:

[REDACTED] | Email address: [REDACTED]

Address: [REDACTED]

● EDUCATION AND TRAINING

13 SEP 2018 – 24 JAN 2024 Islamabad, Pakistan

DOCTOR IN PHILOSOPHY IN PHYSICS Air University, Islamabad (PAK)

In my Ph.D. degree, I am an expert to prepare all kinds of nanomaterials and composites by using the chemical synthesis route. Also, I have a command to do XRD, FTIR, Uv-visible, gas sensing, and electrochemical sensing. I plot and Analysis data and write research papers independently.

Website <https://www.au.edu.pk/> |

Field of study Physics , Environmental sciences , Material science, Nanotechnology | Final grade CGPA 3.54/4 |

Level in EQF EQF level 8 | Thesis Effect of Metallic Oxides on the Sensing Properties of Cobalt Oxide Nanoparticles.

3 SEP 2016 – 7 JUN 2018 Islamabad, Pakistan

MASTER OF SCIENCE IN APPLIED PHYSICS Air University, Islamabad (PAK)Address Air university, E.9, Islamabad, 44230, Islamabad, Pakistan | Website <http://www.au.edu.pk/> |

Field of study Physics | Final grade CGPA 3.17/4 |

Thesis Synthesis, magnetic and temperature dependent dielectric behavior of Co₂FeO₄ spinel ferrite

20 SEP 2016 – 20 SEP 2017 Lahore, Pakistan

BACHELORS IN EDUCATION (B.ED) University of the Punjab, Lahore (PAK)Address Canal Rd, Quaid-i-Azam Campus, , 54850, Lahore, Pakistan | Website <http://pu.edu.pk/> |

Field of study Teacher training with subject specialisation | Final grade 620/850

3 OCT 2010 – 9 SEP 2014 Wah Cantt, Pakistan

BACHLOR OF SCIENCE IN PHYSICS University of Wah, Wah cantt (PAK)Address University of Wah, Quaid Avenue, Wah Cantt, 47040, Wah Cantt, Pakistan | Website <http://uow.edu.pk/> |

Field of study Physics | Final grade CGPA 2.74/4

● WORK EXPERIENCE

1 JUL 2023 – 31 DEC 2023 Messina, Italy

POSTGRADUATE RESEARCHER DEPARTMENT OF ENGINEERING, UNIVERSITY OF MESSINA, ITALY.

The area of my research here is "New method for preparation of nano heterostructure for electrochemical sensor and Gas sensing applications". This enhanced my knowledge and provided me with the opportunity to work in an international environment. Also, in this lab, I learn to do FT-IR, BET, CV, DPV, UV-Spectroscopy, and gas sensing as well as analyze data and write publications that are under process. Considering that the

research area of position is the same as my working area before and now and these current investigations are quite the same, it does not take time to learn about the topic. The main objective of my research is to measure the main parameters and investigate the material and their effects and behavior.

1 JUL 2022 – 31 MAR 2023 Messina, Italy

RESEARCH FELLOWSHIP DEPARTMENT OF ENGINEERING, UNIVERSITY OF MESSINA, ITALY

I am working on a paid project "PON "R&" 2014 – 2020 "EOLO - Mobile system sampling for the control of pollution" cod. n. ARS01_01044".

In the lab, I learn to do FT-IR, BET, CV, DPV, UV-Spectroscopy, and gas sensing as well as analyze data. Considering that the research area of position is the same as my working area before and now and these current investigations are quite the same, it does not take time to learn about the topic. The main objective of my research is to measure the main parameters and investigate the material and their effects and behavior.

Business or Sector Education | **Department** ENGINEERING |

Address UNIVERSITY OF MESSINA, 98122, Messina, Italy | **Website** <https://www.unime.it/it>

31 AUG 2016 – 29 AUG 2017 Taxila Cantt, Pakistan

PHYSICS LECTURER H.I.T DEGREE COLLÈGE, TAXILA CANTT

Lecture planning, preparation, and research checking and assessing students' work.,encouraging personal development, invigilating examinations, attending staff meetings, Laboratory work, and practical performance.

1 FEB 2022 – 1 JUL 2022 Islamabad, Pakistan

VISITING LECTURER IQRA UNIVERSITY, H-9 ISLAMABAD , PAKISTAN.

5 SEP 2017 – 25 DEC 2021 Islamabad, Pakistan

VISITING LECTURER AIR UNIVERSITY,E-9, ISLAMABAD, PAKISTAN

4 MAR 2019 – 31 AUG 2019 Islamabad, Pakistan

VISITING LECTURER FEDRAL URDU UNIVERSITY SCIENCE AND TECHNOLOGY, ISLAMABAD, PAKISTAN

14 NOV 2014 – 30 MAY 2015 Jand/Attock, Pakistan

COLLEGE TEACHER INTERN (C.T.I) GOVT.DEGREE COLLEGE FOR WOMEN,JAND, PUNJAB , PAKISTAN

this is paid internship from government of Paksistan. Lecture planning, preparation, and research checking and assessing students' work.,encouraging personal development, invigilating examinations, attending staff meetings, Laboratory work, and practical performance.

3 SEP 2018 – 29 NOV 2020 Islamabad, Pakistan

UNIVERSITY RESEARCH ASSISTANT ADVANCED MATERIALS PROCESSING LAB, DEPARTMENT OF PHYSICS , AIR UNIVERSITY, E-9,ISLAMABAD, PAKISTAN

This is a paid project by HEC pakistan. My responsibilities are collecting and analyzing data, preparing various materials, interviewing subjects, providing ready access to experimental data, and summarizing interviews. My main job requirements are research skills, critical thinking, excellent writing skills, computer competencies, attention to detail, and teamwork.

● **DIGITAL SKILLS**

Microsoft Word | Power Point | Microsoft Office | Microsoft Excel | Microsoft Powerpoint | LinkedIn | Skype | analytical softwares – Origin, Fityk | Match Crystal Impact | Poster and Graphical Design

● **LANGUAGE SKILLS**

Mother tongue(s): **URDU**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH	C1	C1	C2	C2	C1
URDU	C2	C2	C2	C2	C2
ITALIAN	A2	A1	A2	A2	A2
CHINESE	A1	A1	A1	A1	A1

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

• ADDITIONAL INFORMATION

PUBLICATIONS

Ethanol-Gas-Sensing Performances of Built-in ZrO₂/Co₃O₄ Hybrid Nanostructures – 2023

Madiha Khan, Angelo Ferlazzo, M. Hussain, E. Fazi, Carmelo Corsaro, Angela Maria Mezzasalma, Giovanni Neri

Easy preparation of cobalt oxide/copper oxide composites for gas sensing application – 2023

IOP Physica Scripta

Madiha Khan, Angelo Ferlazzo, Simona Crispi,, Mozaffar Hussain, and Giovanni Neri

Gas sensing performance of Fe₂O₃-Co₃O₄ nano heterojunctions for ethanol detection – 2023

Journal of Materials Science: Materials in Electronics (JMSE).

M.Khan, S.Crispi, M.Hussain, Z. Sarfraz, and G. Neri.

A sensitive and selective non-enzymatic dopamine sensor based on nanostructured Co₃O₄-Fe₂O₃ hetero-junctions.

– 2023

Madiha Khan, Khoulood Abid , Angelo Ferlazzo , Viviana Bressi , Claudia Espro, Mozaffar Hussain, Antonino Foti, Pietro Giuseppe Gucciardi, Giovanni Neri

Highly Improved Acetone gas sensing Performance of mesoporous Cobaltic oxide nanoparticles and physical mechanism

– 2023

Conference paper published in "The Ciência and Engenharia - Science and Engineering Journal".

Madiha Khan, Ahtisham Anjum, Muhammad Zaka, Irum Munir

Elevated temperature behavior of rapidly quenched La/Ce substituted nanocrystalline NdFeB alloys

– 2020

"Elevated temperature behavior of rapidly quenched La/Ce substituted nanocrystalline NdFeB alloys with various compositions" Journal of Alloys and Compounds Volume 845, 10 December 2020, 156292

Mozaffar Hussaina, b,* , Xuefeng Liaob, Rizwan Akrama, Gleb Milyutinb, Madiha Khana , Zhongwu Liub

Effects of Fe₂O₃ on the magnetic and gas sensing properties of Co₃O₄ nanoparticles. – 2023

Under Review, Journal of Next Materials.

Madiha Khan, Simona Crispi , Mozaffar Hussain , Rizwan Akram , Saima Munir , Giovanni Neri .

Electrochemical Sensor for The Determination of Uric acid at different pH Values as well as Hydrogen Sensing at Room Temperature by Using Co₃O₄/Ag₂O Nanocomposites on SPCE

– 2023

Under Revision, *Sensors & Actuators Reports*.

Madiha Khan, Khoulood Abid, Vivana Bressi, Enza Fazio, Mozaffar Husaain, Giovanni Neri.

Development of high-performance acetone gas sensor and L-Tyrosine Electrochemical Sensor based on Co₃O₄ loaded NiO Hybrid Structures.

– 2023

Under Review, *Journal of Nanomaterial (MPDI)*.

Madiha Khan, Abid K, Bressi V, Fazio.E, Hussain M, Foti A, Gucciardi PG, Neri G

CONFERENCES AND SEMINARS

3 MAR 2023 – 4 MAR 2023 – Geneva, Switzerland

International Conference on Global Warming, Climate Change and Pollution Control (GWCCPC-2023)

To present a research paper on her paper titled "Effect of Ag₂O in Co₃O₄ NP's for H₂ Sensing".

3 NOV 2022 – 4 NOV 2022 – Antwerp, Belgium

International Conference on Researches in Science and Technology - (ICRST-22) I present a research paper on the titled "Functional Nanomaterials for the Selective Detection of Danger Gases".

18 MAY 2022 – 18 MAY 2022 – Air university, Islamabad

International conference of Physics I presented a poster and was also the organizer of this conference.

20 SEP 2021 – 21 SEP 2021 – National Centre for Physics (NCP), Islamabad, Pakistan

International Workshop on Nanomaterials for Energy Conversion, Emerging Photovoltaic and Optoelectronic Technology (NEEPO-21) (Online)

14 SEP 2021 – 15 SEP 2021 – National Centre for Physics (NCP), Islamabad, Pakistan

5th National Symposium on Laser Matter Interaction (LMI) (Virtual)

22 AUG 2021 – 26 AUG 2021 – National Centre for Physics (NCP), Islamabad, Pakistan

10th School on LHC Physics (virtual)

10 NOV 2018 – 11 NOV 2018 – PENSTIC Islamabad

Symposium on Dielectrics and High Frequency Microwave Materials I present a poster in this Symposium. The Title of my poster is "Synthesis, magnetic and temperature dependent dielectric behavior of Co₂FeO₄ spinel ferrite "

12 FEB 2017 – 14 FEB 2017 – Air University, Islamabad

International Conference of Mathematics and Physics I am organizer in this conference.

HONOURS AND AWARDS

1 JUL 2023

Post Graduate Researcher – Department of Engineering, University of Messina, Messina, Italy. I was working on a paid project "PON "R&" 2014 – 2020 "EOLO - Mobile system sampling for the control of pollution."

1 JUL 2022

Research Fellowship – Department of Engineering, University of Messina, Messina, Italy. I was working on a paid project "PON "R&" 2014 – 2020 "EOLO - Mobile system sampling for the control of pollution".

31 DEC 2021

International Research Initiative Program (IRSIP) Fellowship – Higher Education Commission of Pakistan

10 DEC 2019

Vice President at Alumni Network – Department of Physics, Air university, Islamabad. I serve as a vice president of the Alumni Network, Air university Islamabad. Present faculty of basic and applied sciences.

5 SEP 2018

Research Assistant – Higher Education Commission, (HEC), Islamabad, Pakistan. Project number 10035/Federal/NRPU/R& D/HEC/2017 is based on a synthesis of rare-earth-based permanent magnets.

9 APR 2018

Merit Base Laptop – Prime Minister Youth Laptop Scheme, Phase 4, Islamabad, Pakistan Chief Minister Punjab "Mian Shahbaz Sharif" (2018) awarded laptops on a merit basis.

PROJECTS

1 JUL 2023 – 31 DEC 2023

PON "R & amp;" 2014 – 2023 "EOLO - Mobile System Sampling for the Control of Pollution I won this position in Prof. G.Neri's group among 15 students from all over the world. They hired me as a research fellowship in a paid project titled "PON "R&" 2014 – 2020 "EOLO - Mobile system sampling for the control of pollution".

1 JUL 2022 – 30 MAR 2023

PON "R & amp;" 2014 – 2020 "EOLO - Mobile System Sampling for the Control of Pollution I won this position in Prof. G.Neri's group among 15 students from all over the world. They hired me as a research fellowship in a paid project titled "PON "R&" 2014 – 2020 "EOLO - Mobile system sampling for the control of pollution".

5 JUL 2018 – 30 JUL 2019

Synthesis of Rare-Earth-Based Permanent Magnets I was selected among 6 members of my Ph.D. research group for this project. I was working on Dr. Mozaffar Hussain's group in a paid project, Project number 10035/Federal/NRPU/R& D/HEC/2017 is based on a synthesis of rare-earth-based permanent magnets, given by Higher Education Pakistan.

JOB-RELATED SKILLS

Technical and Operational Skills

1. DRS Spectroscopy
2. Gas Sensing
3. Cyclic Voltammetry
4. FT-IR
5. Uv-Visible Spectroscopy

Experimental Skills

1. Synthesis of Functional Nanomaterials and Nanocomposites
2. Fabrication of Nanomaterials
3. Bandgap Engineering
4. Gas sensing
5. Electrochemical Monitoring

Analytical skill

Data Analysis of:

1. X-ray Diffraction (XRD)
2. Fourier Transform Infrared (FT-IR) Spectroscopy
3. UV-Vis spectroscopy
4. Diffuse Electron Microscopy (DRS)
5. Scanning Reflectance Spectroscopy (SEM)
6. Energy-Dispersive X-ray Spectroscopy (EDS)
7. Brunauer-Emmett-Teller (BET) Surface Analysis.
8. Gas Sensing
9. Cyclic Voltammetry (C-V)
10. Impedance Spectroscopy (I-S spectroscopy)
11. Vibrating-Sample Magnetometer (VSM)

COMMUNICATION AND INTERPERSONAL SKILLS

Presentation and scientific talk

1. Communication (Verbal and Verbal-writing)
2. Flexibility and Integrity

3. Teamwork
4. Problem Solving

NETWORKS AND MEMBERSHIPS

20 DEC 2019 – CURRENT Air university, E-9, Islamabad, Paksitan

Vice President in Alumni Network

I serve as a vice president of Alumni Network, Air university Islamabad.

HOBBIES AND INTERESTS

Sports & Games

1. Batmintain
2. Running
3. Tábale tennis

RECOMMENDATIONS

Prof.Giovanni Neri Full Professor

I have known them for the last two years. He is my Supervisor in Italy, Department of Engineering, University of Messina, Messina. Italy. I am still working in his sensor laboratory.

Email giovanni.neri@unime.it | **Phone** (+39) 3477278520

Dr.Mozaffar Hussain Associate Professor (HOD)

I have known them for the last five years. He is my Ph.D. supervisor at the Department of Physics, Air University, Islamabad.Pakistan.

Email mozaffarhussain@mail.au.edu.pk | **Phone** (+92) 3495014214

Dr. Muhammad Átif Professor

I have known them for the last seven years. He is my Master's supervisor in the Department of Physics, Air University, Islamabad.Pakistan.

Email matif_80@yahoo.com | **Phone** (+92) 3088825669

Dr.Naveed Ejaz Researcher

I have known them for the last two years. He was my colleague in the Department of Computer Science, at Iqra University, Islamabad.Pakistan.He was Head of the Department in University and I was working there a Lecturer.

Email Naveed.ejaz@queensu.ca | **Phone** (+1) 6478972612