Dr. Mirza Mahmood Baig

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Skills

- Nanomaterial Synthesis & Optimization of Wet Chemical Routes.
- Application of Nanomaterials for Environmental Remediation.
- Application of Ferrites, Substituted Ferrites (Magnetic Materials) & Mesoporous Silica for Advanced Technological Applications.
- Fabrication of emerging 2Dmaterials (MXene) and their Composites.
- Undergraduate teaching & Scientific Writing.

Work History

2021-12 –Till date

IPFP Fellow (HEC)

Department of Chemistry, University of Narowal, Narowal. Pakistan.

2011-03 2013-01

Research Assistant

The Islamia University of Bahawalpur, HEC funded project (Project No: PM-IPFP/HRD/HEC/2011/2264), Bahawalpur, Pakistan

Synthesis, Characterization, Modification & Application of Mesoporous Silica for Environmental Remediation Application

2011-09-2012-02

Teaching Assistant/Laboratory Instructor

Physical chemistry laboratory, The Islamia University of Bahawalpur, Bahawalpur, Pakistan

Practical Demonstration of BS (Chemistry)

2010-01–2011-03

Lab Demonstrator/Lab Technician

Public Health Engg. LAB (Military College of Engineering, Risalpur) (NUST), Environmental Chemistry Lab, IESE (NUST), Islamabad, Pakistan

- Water and Wastewater Quality Monitoring
- Practical Demonstration
- Mentoring Post graduate students in their research projects
- Analysis of research samples using X-ray Fluorescence spectrometer, Gas Chromatography, Total Organic Carbon Content Analyzer, Atomic Absorption Spectrometer, Particle size analyzer etc.

Education

2015-02 2020-07

Ph.D.: Chemistry

The Islamia University of Bahawalpur, Pakistan - Bahawalpur, Pakistan

Research Thesis: Studies of Structural and Physical Properties of Rare Earth Substituted Manganese Soft Ferrites

- **Awarded**: Best research award of the year 2017 by Nanomaterials Research Group ofthe Departmentof Chemistry and Physics (The Islamia University of Bahawalpur).

2011-03-2014-01

Master of Philosophy (M.Phil): Chemistry

The Islamia University of Bahawalpur - Bahawalpur, Pakistan

Research Thesis: Adsorption Study of Methylene Orange on the *Tribulus Terrestris*.

Additional Information

- Good hand on fabrication of nanostructures through template-based synthesis, hydrothermal method, Sol-gel method, microemulsion method, Sol-gel Auto-combustion. Green Synthesis and utilization of substituted Metal Oxide based material for environmental remediation applications.
- Proficiency in operating characterization facilities including Atomic Absorption spectrophotometer, X-ray Fluorescence Spectrometer, Particle size Analyzer, TC Analyzer, GC, UV-visible Spectrophotometer.
- Expertise in data analysis of materials characterizations techniques like BET, XRD, FTIR, SEM, EDS, UV-Vis, VSM, Dielectric, I-V, TGA/DSC.

Research Publications **(Cumulative Impact Factor = 90)**

1. **Baig, M. M.**, Zulfiqar, S., Yousuf, M. A., Shakir, I., Aboud, M. F. A., & Warsi, M. F. (2021). $Dy_xMnFe_{2-x}O_4$ nanoparticles decorated over mesoporous silica for environmental remediation applications. ***Journal of Hazardous Materials****, 402*, 123526. (I.F = 14.2)
2. **Baig, M. M*.**, Yousuf, M. A., Agboola, P. O., Khan, M. A., Shakir, I., & Warsi, M. F. (2019). Optimization of different wet chemical routes and phase evolution studies of $MnFe_2O_4$ nanoparticles. ***Ceramics International****, 45*(10), 12682-12690. (I.F = 5.53)
3. **Baig, M. M***., Yousuf, M. A., Warsi, M. F., Agboola, P. O., Sher, M., & Shakir, I. (2019). Surfactant assisted synthesis of rare earth Dy^{3+} substituted $MnFe_2O_4$ nanoparticles. ***Ceramics International****, 45*(14), 18014-18022. (I.F = 5.53)
4. **Baig, M. M.**, Zulfiqar, S., Yousuf, M. A., Touqeer, M., Ullah, S., Agboola, P., . . . Shakir, I. (2020). Structural and photocatalytic properties of new rare earth La^{3+} substituted $MnFe_2O_4$ ferrite nanoparticles. ***Ceramics International****, 46*(14), 23208-23217. (I.F = 5.53)

5. **Baig, M. M.**, Yousuf, M. A., Zulfiqar, S., Safeer, A., Agboola, P. O., Shakir, I., & Warsi, M. F. (2021). Structural and electrical properties of La^{3+} ions substituted $MnFe_2O_4$ ferrite nanoparticles synthesized via cost-effective reverse micelles strategy. ***Materials Research Express**, 8*(3), 035002. (I.F = 2.02)
6. **Baig, M. M.**, Yousuf, M. A., Alsafari, I. A., Ali, M., Agboola, P. O., Shakir, I., . . . Warsi, M. F. (2021). New mesostructured origami silica matrix: a nano-platform for highly retentive and pH-controlled delivery system. ***Taylor & Francis: Journal of Taibah University for Science**, 15*(1), 133-144. (I.F = 3.46).
7. Naseem, T., **Baig, M. M**., Warsi, M. F., Hussain, R., Agboola, P. O., & Waseem, M. (2020). Mesoporous silica prepared via a green route: A comparative study for the removal of crystal violet from wastewater. ***Materials Research Express***, 30;8(1):015005. (I.F = 2.02)
8. Touqeer, M., **Baig, M. M**., Aadil, M., Agboola, P. O., Shakir, I., Aboud, M. F. A., & Warsi, M. F. (2020). New Co-MnO based Nanocrsytallite for photocatalysis studies driven by visible light. ***Taylor & Francis: Journal of Taibah University for Science**, 14*(1), 1580-1589. (I.F = 3.46)
9. Yousuf, M. A., **Baig, M. M**., Al-Khalli, N. F., Khan, M. A., Aboud, M. F. A., Shakir, I., & Warsi, M. F. (2019). The impact of yttrium cations (Y^{3+}) on structural, spectral and dielectric properties of spinel manganese ferrite nanoparticles. ***Ceramics International**, 45*(8), 10936-10942. (I.F = 5.53)
10. Yousuf, M. A., **Baig, M. M**., Shakir, I., Agboola, P. O., & Warsi, M. F. (2020). The investigation of structural and magnetic properties of $MnFe_{2-x}W_xO_4$ nanoparticles. ***Results in Physics**, 19*, 103365. (I.F = 4.56)
11. Yousuf, M. A., **Baig, M. M**., Waseem, M., Haider, S., Shakir, I., Khan, S. U.-D., & Warsi, M. F. (2019). Low cost micro-emulsion route synthesis of Cr-substituted $MnFe_2O_4$ nanoparticles. ***Ceramics International**, 45*(17), 22316-22323, (I.F = 5.53).
12. Mahmood, M., Yousuf, M. A., **Baig, M. M**., Imran, M., Suleman, M., Shahid, M., . . . Warsi, M. F. (2018). Spinel ferrite magnetic nanostructures at the surface of graphene sheets for visible light photocatalysis applications. ***Physica B: Condensed Matter**, 550*, 317-323, (I.F = 2.98).
13. Munir, S., **Baig, M. M**., Zulfiqar, S., Saif, M. S., Agboola, P. O., Warsi, M. F., & Shakir, I. (2022). Synthesis of 2D material based $Bi2O_3$/MXene nanohybrids and their applications for the removal of industrial effluents. ***Ceramics International,*** Volume 48, (15), 21717-21730, (I.F = 5.53).
14. **Baig, M. M.** et al. (2021). A Facile Approach to synthesize ZnO-decorated

Titanium Carbide nanoarchitectures to boost up the photodegradation performance, ***Ceramics International,*** 47(23), (I.F = 5.53)

15. **Baig, M. M*.** *et al*., (2022), Green Nickel/Nickel Oxide Nanoparticles for Prospective Antibacterial and Environmental Remediation Applications, ***Ceramics International,*** 48(6), 8331-8340 (I.F = 5.53).

16. Hassan M., **Baig, M. M***, Shah K. H. , Hussain A., Hassan S. A. , Ali A., (2022), MOF-based bimetallic diselenide nanospheres as a bifunctional efficient electrocatalysts for overall water splitting, ***Journal of Physics and Chemistry of Solids***, 167, 110780. (I.F =4.38).

17. **Baig, M. M***, Hassan M., Ali T., Asif H. M. , Asghar. A, Sana Ullah, Ibrahim A. Alsafari, Zulfiqar. S.,(2022), Green 2D simonkolleite/zinc based nanostructures for superior antimicrobial and photocatalytic applications, ***Materials Chemistry and Physics***, 126292, (I.F =4.78).

18. Junaid, M., Kousar, I., Gulbadan, S., Khan, M. A., Yousuf, M. A., **Baig, M. M.**, .. & Morsi, M. (2022). Structural, microstructural, spectral, and dielectric properties of erbium substituted spinel ferrites. ***Physica B: Condensed Matter***, 414120, (I.F = 2.98).

Conference Participation

♦ **November 1 - 2, 2018**

Poster Presentation in International Conference on Nanoscience and Nanotechnology, (ICONN), (NUST & LUMS), Islamabad, Pakistan.

♦ **February 15- 17, 2018**

Poster Presentation in 6th International Conference on “Semiconductor Materials and Nano- Devices” organized by Department of Physics, The Islamia University ofBahawalpur.

References

1. **Prof. Dr. Muhammad Farooq Warsi (Supervisor)**
Associate Professor, Departmentof Chemistry, Facultyof Sciences, The Islamia University of Bahawalpur. Email: farooq.warsi@iub.edu.pk, Phone +92 345 5411391.

2. **Prof. Dr. Muhammad Suleman**
Associate Professor, The Department of Agricultural Chemistry & Biochemistry, The University of Agriculture Peshawar, Pakistan. Email: suleman@aup.edu.pk, Phone: +92 919216903, Mobile: +92 3004554824

3. **Prof. Dr. Muhammad Arshad**
Associate Professor, Department of Environmental Science, IESE, National University of Sciences and Technology, (NUST). Email: marshad@iese.nust.edu.pk, Tel: +925190854309, +92 332 5523665.

Certificate of Achievement

One month training of **National Faculty Development Program 2021** on Effective Teaching, Lesson Plan, Assessment, Research Proposal etc., organized by National Academy of Higher Education, HEC, Islamabad.