Faran Baig

Phone: +92 3224095397 | Email: faran.baig@gcu.edu.pk | Residence: Lahore, Pakistan

Nationality: Pakistan |

Profile

Applied Physicist with extensive experience of teaching theory courses, lab practical and supervision in thesis/projects in BS & MPHIL Electronics. Current research includes metal oxide thin film/nanostructures and nanoparticle synthesis and investigations for optical, light induced reversible wettability, photo-catalytic, optoelectronic and energy storage applications.

Technical Skills & Trainings

Electronic Software: Proteus, workbench, circuit maker.

MATLAB: Fuzzy Logic MATLAB Simulations.

Origin Software: Graph plots to analyse experimental data.

Thin Film & nanoparticle Synthesis: For Electronic devices

XRD and VSM: Training received from LUMS Pakistan

Summary

- PhD in Physics (Synthesis and Characterization of Group II Elements Doped ZnO Thin Films).
- **Research supervision:** Extensive experience in supervision of undergraduate students in Electronics and Physics.
- **Teaching**: Extensive experience of undergraduate teaching.

Education

Government College University, Lahore, Pakistan ***2021***

PhD in Physics, Supervisors: Dr. Ali Asif, Co-supervisor: Dr. M. Waseem Ashraf

Thesis: Synthesis and Characterization of Group II Elements Doped ZnO Thin Films

Current Position

Assistant Professor, Department of Electronics,
Government College University (GCU), Lahore, Pakistan.

Research Experience

Guest Researcher, Department of Physics and Technology, University of Bergen, Norway ***2019***

- During Norway visit, I performed work on preparation of nano-crystalline diamonds (NCD) by microwave plasma and investigated wetting and anti-icing properties of NCDs, in the Department of Physics and Technology, University of Bergen, Norway.

PhD, GC University, Lahore, Pakistan ***2021***

- Employed a comprehensive study to understand the influence of group II elements, magnesium and calcium doping in ZnO thin film by chemical methods on optical, surface, wetting, anti-icing, photo-catalytic and UV sensing properties. The outcomes of my research have been published in impact journals like *OPTIK (2020), Material Research Express (2020), Journal of Sol-gel Science and Technology (2021) and Journal of Electronic Materials (2021).*

M.Phil, GC University, Lahore, Pakistan ***2010***

- This work addressed the medical diagnosis regarding the normality of a human function in human brain and the diagnosis of haemorhage and brain tumor. This enhances the control strategies in the medical field to diagnose a disease. This system uses fuzzy logic design by using MATLAB simulation. The results of this

research have been published in International Journal on Computer Science and Engineering (IJCSE), Vol. 3 No. 5 May 2011.

Research Area

- Fuzzy Logic MATLAB Simulations
- Thin film and nanoparticles synthesis for investigation of various properties (Photo-catalytic, Light induced wettability, Optoelectronic & Energy storage (CV, GCD, EIS, ED, PD)).

Publications

1. **Faran Baig,** Dr. M Saleem Khan, Yasir Noor and M Imran, Design model of fuzzy logic medical diagnosis control system, International Journal on Computer Science and Engineering (IJCSE), Vol. 3 No. 5 May 2011.
2. **Faran Baig,** Dr. M Saleem Khan, Dr waseem and M Imran, zahoor ahmad, Design model of fuzzy logic fuel consumption system, behria university journal (BUJICT) dec. 2012.
3. **Faran baig,** Dr waseem, M Imran, Design and simulation of fuzzy logic based ELID grinding control system, IJATER Volume 3, Issue 1, Jan. 2013.
4. Khizar Nabi, Rida Rafi, M Waseem Ashraf, shahzadi tayyaba, Zahoor Ahmad, M Imran, **Faran Baig**, Nitin Afzulpurkar, Simulation and analysis of T-junction microchannel, May 2013 Sensors and Transducers 152(5):146-151.
5. Zahoor Ahmad, M Waseem Ashraf, **Faran Baig**, M Imran, Shahzadi Tayyaba, Design and simulation of night switch by using fuzzy logic, January 2013.
6. M Saleem Khan, Zahoor Ahmad, M Waseem Ashraf, S. Yasmeen, M Imran, **Faran Baig**, Nechirwan Yaseen, S jabeen, Controlling and monitoring of temperature system for livestock, January 2014 Journal of Animal and Plant Sciences 24(3):969-972
7. **Faran Baig**, Ali Asif, Muhammad Waseem Ashraf, Muhammad Imran, Comparative study for seed layer solvent effects on structural and optical properties of MgZnO thin films deposited by chemical bath deposition technique, Mater. Res. Express 7 (2020) 026417.
8. **Faran Baig**, Muhammad Waseem Ashraf, Ali Asif, Muhammad Imran, A comparative analysis for effects of solvents on optical properties of Mg doped ZnO thin films for optoelectronic applications, Optik - International Journal for Light and Electron Optics 208 (2020) 164534.
9. **Faran Baig**, Ali Asif, Muhammad Waseem Ashraf, Hafiz Muhammad Fahad, Tailoring of optical, hydrophobic, and anti-icing properties of Ca–Mg co-doped ZnO thin films via sol–gel method, Journal of Sol-Gel Science and Technology, 97 (2021) 706-720.
10. **Faran Baig**, Ali asif, Muhammad Waseem Ashraf, UV Light-induced reversible wettability and sensing performance for Ca/Mg-doped ZnO nano-structures via chemical bath deposition, Journal of Electronic Materials (2021) 50:4016–4026.
11. **Faran Baig**, H M Fahad, Iram Naeem, Shafaq Raza, Effects of Pre-heating Method on the Optical, Wetting, Photo-catalytic and UV Sensing Properties of Al:ZnO Thin Films, Results in Optics 12 (2023) 100485.
12. **Faran Baig**, G S Butt, Impact of copper doping on optical, UV induced wettability and photo-catalytic properties of sol-gel synthesized ZnO thin films, Volume 288, October 2023, 171196.
13. Shafaq Raza, **Faran Baig**, Hafiz Muhammad Fahad, Iram Naeem, Investigation of Cd and Co co-doped ZnO nanopowder for supercapacitor applications, Journal of Sol-Gel Science and Technology, 109 (2023) 407-420.

14. Iram Naeem, **Faran Baig**, H M Fahad, Shafaq Raza, Analysis of Mg & Ni co-doped ZnO nano-powder for super-capacitor applications, Ionic Journal, Springer. https://doi.org/10.1007/s11581-024-05447-y.
15. **Faran Baig**, Zeeshan Zaheer, Zahid Khan, Faheem Qasim, A comparative study of optical, reversible wettability and UV light sensitivity of ZnO nano-structures via chemical methods, Optical and Quantum Electronics, (2024) 56:715.
16. Muhammad Imran Bashir, Muhammad Imran, Faiza Anjum, Amara Nasir, Shaista Taimur, **Faran Baig**, Zeeshan Zaheer, Faheem Qasim, A single electrode comparison of Ni & Cu MOF for supercapacitor applications, Solid State Communications 403 (2025) 115991.