Saeed Omer, M.S.

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EDUCATION

M.S. in Chemistry, Pakistan Institute of Engineering and Applied Sciences (PIEAS) (Jan 2019 - Nov 2020)
B.S. in Chemistry, Bahauddin Zakariya University, Pakistan (Oct 2014 - Jun 2018)

TEACHING EXPERIENCE

Lecturer, Chemistry, Pakistan Institute of Engineering and Applied Sciences (PIEAS) (Nov 2020 – present)

- Taught undergraduate courses and labs in Inorganic, Physical, and Analytical Chemistry.
- Taught master's courses in Polymer Chemistry, Surface Chemistry, and Electrochemistry

RESEARCH EXPERIENCE

Synthetic Chemist, Polymer Composite Group (PCG), PIEAS (May 2022-present)

- **Roles:** Polymer Synthesis, characterization, and processing | Development of Electrospun Nanofibers

Master Thesis (Jan 2020- Nov 2020)

- Synthesized additive-free tungsten trioxide (m-WO_3) nanoparticles via sol-gel and hydrothermal methods.
- Analyzed their size, crystallinity, and morphology using DLS, XRD, and SEM.
- Prepared thin film onto FTO glass using the spin-coating method.
- Evaluated electrochromic potential using potentiometry, voltammetry, and impedance spectroscopy.
- Assessed optical performance using in-situ optical spectroscopy.
- Achieved 80% transmittance in the bleached state and 10% in the colored state at 555 nm wavelength.

Bachelor Semester Projects (Sep 2016- Jun 2018)

- Synthesis and characterization of polymer electrolytes for Li-ion batteries.
- Developed phenolic ink formulations for binder jet printing of carbon and silica structures.
- Mechanistic Studies of Electrochemical Reduction of CO_2 (ERC) into Fuels
- Development of machine learning algorithms using structural-property relationship data to predict and synthesize novel materials for catalysis, energy storage, and energy conversion applications.

Peer-reviewed Publications

Sr.	Publication	Year, Journal	Authorship
1	Preparation and investigation of Montmorillonite-K10 Polyaniline nanocomposites for optoelectronic applications. **DOI:** https://doi.org/10.1016/j.heliyon.2024.e27573	2024, Heliyon	3rd Co-author
2	Scalable synthesis of high-quality, reduced graphene oxide with a large C/O ratio and its dispersion in a chemically modified polyimide matrix for electromagnetic interference shielding applications. **DOI:** https://doi.org/10.1039/D4RA00329B	2024, RSC Advances	3rd Co-author
3	Guar gum assisted synthesis of high-quality silver nanoplates and their polyimide matrix nanocomposites for electromagnetic interference shielding applications. **DOI:** https://doi.org/10.1002/app.55389	2024, Journal of Applied Polymer Science (JAPS)	3rd Co-author
4	Development of Ce-doped hydroxyapatite–sodium alginate biocomposite for bone and dental implants. **DOI:** https://doi.org/10.1039/D2NJ06203H	2023, New Journal of Chemistry (NJC)	4th Co-author
5	Preparation of additive-free tungsten trioxide thin films using spin-coating method for electrochemical applications. **DOI:** https://doi.org/10.1007/s13204-023-02790-w	2023, Applied Nanoscience	**First Author**

Thesis Supervision

- Co-supervised eight M.S. theses in diverse research fields, including Computational Chemistry (DFT), Electrochemistry, Polymer Nanocomposites, Catalysis (electrocatalysis and photocatalysis), Adsorption, and Organic Synthesis.

SKILLS

Materials Synthesis and Processing

- Laboratory scale wet synthesis
- Processing of polymers using Melt Mixing, Powder Mixing, Moulding, Extrusion, and 3D Printing
- Binder Jet Printing (BJP) and Fused Deposition Modelling (FDM) technologies
- Development of Electrospun Nanofibers
- Electrode preparation (using doctor blade and drop casting) and coin cell assembly testing

Material Characterization

Good understanding and experience in employing the following analytical and characterization techniques:

- **Chemical Characterization:** FTIR, Raman, UV-visible, NMR, XRF
- **Thermal Characterization:** TGA, DSC, DMA
- **Physical Characterization:** BET, DLS, XRD, SEM
- **Electrochemical Characterization:** Potentiometry, Voltammetry, Impedance Spectroscopy
- **Separation Techniques:** GC, HPLC, GPC

Data Processing and Analysis

- Python Programming (Machine Learning, Modelling, and Scientific Data Analysis), LaTeX, Origin
- Chemistry Software**:** RDKit, PySCF, Gaussian, Quantum Espresso, ChemDraw

Communication Skills

- **English Language:** Overall score of **7.0 Bands** in **IELTS Academic (CFER Level: C1)**

Leadership skills

- Possess strong motivation, communication, collaboration, adaptability, critical thinking, and time management skills.

CERTIFICATIONS

- **MS-PhD Program Coordinator**, Department of Chemistry, PIEAS (Nov 2020 – Jan 2024)
  Roles: Coordinated academic and administrative aspects, including student support, faculty assistance, program marketing, and program evaluation.
- **Crash Course on Python** *(Coursera, Licence: https://rb.gy/0s9y9h, 2023)*
  Duration: 32 hours | **Skills:** Python Syntax, Data Structures, Object-Oriented Programming
- **National Faculty Development Program**, Higher Education Commission (HEC), Pakistan. (*2023)*
  Duration: Three Weeks | **Skills:** Grant Writing, Publishing Research, and Industry-Academia linkages
- Two-day hands-on training on Raman and Fourier Transform Infrared (FTIR) Spectroscopy. *(2021)*
- One-day training on using electron beam/X-rays technology for value addition of food products. *(2019)*

CONFERENCES

- Participated in the 11th and 12th Chemistry Conferences titled "Chemistry in Engineering and Life Sciences. *(Chemistry Division, PINSTECH, 2022&2023)*
- Organized the 1st International Symposium on "Advances in Chemistry, Polymer Sciences, and Biomedical Materials. *(Department of Chemistry, PIEAS, 2019)*

AWARDS

- Awarded a **lectureship** at PIEAS for outstanding research and academic performance. (Nov 2020)
- Received a fully funded **master's fellowship** from PIEAS for outstanding academic performance. (2018)
- Achieved the title of **Best Graduate** for the years 2018, 2017, and 2015 for securing the highest GPAs.

SOCIAL AND COMMUNITY SERVICES

- Member of the Green Youth Movement (GYM) Club, PIEAS Chapter for the Academic Year 2023-2024.
  Roles: Awareness and Promotion of **Sustainable Development Goals (SDGs)** among the students
- Served as an active member of PIEAS Volunteer Blood and Food Banks (2019-2023)
- Served as a human rights inspector at the Ministry of Human Rights, Pakistan (2016-2018)
- Served as a climate conservation activist at the Punjab Government, Pakistan (2015-2017)
- Served as volunteer quality control analyst for soil and drinking water testing at a local NGO. (2016)