Kamran Alam

EDUCATION AND TRAINING

01/11/2021 – 24/01/2025 Rome, Italy PHD IN CHEMICAL PROCESSES FOR INDUSTRY AND ENVIRONMENT La Sapienza University of Rome

- Synthesizing bimetallic nanoparticles for enhanced wastewater treatment using Spinning Disc Reactor (SDR).
- Modeling and optimizing nanocatalysts for efficient wastewater treatment.
- Synthesizing photocatalysts using various methods (Solvothermal, Co-precipitation, sol-gel).
- Developing metallic nanoparticles for diverse applications using SDR.
- Creating nanomaterials embedded in nanofiber membranes via electrospinning (ES).
- Producing Pullulan and tranexamic acid nanofiber membranes for face and beauty masks
- Developing PVP, PVDF, and PAN membranes for wastewater treatment.

Address 00182, Rome, Italy | Website https://www.uniroma1.it | Field of study Chemical engineering and processes |

Thesis Development and optimization of nanomaterials Processes for degradation of emerging pollutants

07/03/2016 - 18/08/2018 Peshawar, Pakistan

MASTER OF SCIENCE IN MATERIALS FOR ENERGY STORAGE AND CONVERSION US-Pakistan center for Advanced studies in Energy, UET Peshawar

CGPA: 3.56/4.00

Thesis title: Fabrication of Silica Nano-porous, self-cleaning and anti-reflection coatings for solar PV modules Short description: The focus of this master thesis is to develop multi-functional silica nano particles coatings for planer surfaces such pervoskite and dye sensitized solar cells. The coatings are designed and simulated using Sun-solve for different cells and refractive index, thickness and number of layers are optimized. Aerosol Spray deposition system is used to develop the coatings and applied on the surfaces. The UV-Spectroscopy results shows that reflection losses are decreased from 9% to 2% in a broad range of solar spectrum i.e., wavelength 300-1200 nm. In addition, due to high porosity and sufficient roughness, the coated thin film shows excellent self-cleaning and antifogging properties with water contact angle less than 5°.

Supervisor: Dr. Saim Saher

16/08/2017 – 06/12/2017 Arizona, United States ENERGY RESEARCH TRAINING PROGRAM Arizona state University, Tempe Campus

04/09/2010 – 07/12/2014 Peshawar, Pakistan **BACHELORS OF SCIENCE IN CHEMICAL ENGINEERING** University of engineering and technology, Peshawar

CGPA: 3.10/4.00

Thesis title: Designing of Ammonia production plant for 50,000 ton/year capacity Short description: In this work, Ammonia plant is designed for the known capacity of 50,000 per autumn. Each equipment in the production plant is designed but mechanical design of High temperature shift converter was done only. Economic analysis and process instrumentation and safety was done for the whole plant. **Supervisor:** Dr. Qurat ul Ain

WORK EXPERIENCE

22/08/2019 - 17/09/2021

UNIVERSITY RESEARCH ASSISTANT GHULAM ISHAQ KHAN INSTITUTE OF ENGINEERING SCIENCES AND TECHNOLOGY

- Worked on synthesis of novel nanomaterials for Solar water splitting and emerging pollutant degradation
- Conducted hands-on lab activities, guiding students through experiments and analysis.

- Established a state-of-the-art catalysis lab with the necessary resources.
- Designed innovative photoreactors for advanced research.
- · Collaborated with faculty to optimize lab procedures.
- Contributed to curriculum development and course planning.
- Published research findings and presented at conferences.

21/12/2014 - 05/02/2016

TRAINEE ENGINEER WAH NOBLE ACETATES LIMITED

- Monitoring of Plant parameters and maintaining quality and compliance targets.
- DCS Operations from Central control room
- Commissioning of new Projects
- Optimization of Plant utilities and Cooling plant system
- Shift Control of plant at emergencies

01/05/2018 - 18/08/2019 Peshawar, Pakistan

PROJECT ENGINEER US-PAKISTAN CENTER FOR ADVANCED STUDIES IN ENERGY, UET

Project Title : "Anti-soiling Coating of Quaid-e-Azam Solar Park (QASP) PV modules", funded by USAID. A Joint Research Project of Arizona State University and USPCAS-E which was Supervised by Prof. Dr. Govindasamy Tamizhmani, head of "Photovoltaic reliability lab" at Arizona state university.

- To investigate the power losses due to soiling and dust accumulation on QASP PV modules
- To do research and procure equipment and tools related to project
- To develop and characterize thin film nanoparticles coatings in the Advanced Materials lab
- To write the technical report of the project on quarterly basis

15/08/2017 – 10/12/2017 Rawalpindi, Pakistan EXCHANGE RESEARCH SCHOLAR/LABORATORY ENGINEER ARIZONA STATE UNIVERSITY

Courses Completed:

- 1. Technology Entrepreneurship Course by Prof. Ken Mulligan
- 2. Energy Policy course by Prof. Clark Miller
- 3. Technical Writing by Prof. Zachary Holman

Main achievements:

- · Optimized and fabricated Anti-soiling and Antireflection coatings for Solar PV modules
- Completed training on fabrication and characterization tools e.g SEM, AFM, TEM, FTIR UV-spectrophotometer and others
- Developed a valuable business idea of Micro-hydro project being a solution to the energy crisis of Pakistan
- Worked in a funded Energy project "Fabrication of PDMS layers for Pervoskite/silicon tandem solar cells" in the lab
- · Successfully completed the Energy research training and Lab work

PUBLICATIONS

Publications

- Alam, K*., Imran Khan, K., Izzi, L. and Stoller, M. (2024). Enhanced photocatalytic efficiency of Ag-decorated g-C3N4 and NiFe-LDH heterostructure under visible light irradiation. Chemosphere. (Manuscript under review)
- Alam, K*., Imran Khan, K., Izzi, L., Valerdi, G. and Stoller, M. (2024). Synthesis of Ag/Ni-Al LDH/g-C3N4 Composites for the Enhanced Hydrogen Evolution. Journal of Environmental Chemical engineering (Manuscript under review)
- Badshah, M., Mehdi, S., **Alam, K***. et al. (2024). Room temperature oxidation of gaseous formaldehyde over silverdoped manganese oxide catalyst. Chem. Pap. 78, 4383–4393. https://doi.org/10.1007/s11696-024-03397-3
- Raza, N. Z., Majid, A., Jabeen, A., Haider, S., & **Alam, K**. (2024). First principles study on Interaction in inorganic Molecular Crystals at zero dimensions. Journal of Molecular Structure, 139102.
- Naseem K, Abrar E, Haider S, Alam K*. (2024). Polyurethane-based nanocomposite for catalytic reduction of toxic dyes. Polym Adv Technol.; 35(4):e6372. doi:10.1002/pat.6372.
- Shehbaz, A., Majid, A., Batool, H., Alkhedher, M., Haider, S., & Alam, K*. (2024). Probing the potential of AI 2 CO/SiC heterostructures for visible light-driven photocatalytic water splitting using first-principles strategies. Journal of Materials Chemistry A, 12(21), 12657-12671.
- Ullah, A., **Alam, K***., Khan, S. U., & Starov, V. M. (2021). Influence of Membrane Vibration on Particles Rejection Using a Slotted Pore Membrane Microfiltration. Membranes, 11(9), 709.
- Naseem, K., Haider, S., Alam, K. et al. A Polyurethane-Based Composite Hydrogel as Functional Support for Metal Nanoparticles: An Efficient Catalyst and Antibacterial Agent. JOM (2025). https://doi.org/10.1007/s11837-025-07195-
- Alam, K*., Khan, K. I., Ullah, A., Ullah, A., Ali, S., Ullah, S. & Hussain, S. (2021). Fabrication of super hydrophilic and graded index antireflective double layer coating for solar photovoltaics module using aerosol impact deposition assembly. Thin Solid Films, 721, 138518. doi.org/10.1016/j.tsf.2021.138518.

- Ullah, A., Khan, S. U., **Alam, K**., & Khan, H. (2021). A novel analytical approach for the estimation of shear in the oscillatory membrane microfiltration. Environmental Challenges, 100066. doi.org/10.1016/j.envc.2021.100066.
- Alam K*, Ali S, Saboor A, Salman M, Maoz, Humayun M, Sadiq M, Arif, M. Antireflection, Superhydrophillic Nano Porous SiO2 Coating based on Aerosol Impact Spray Deposition Technique for Solar PV Module. Coatings. 2019; 9(8):497. doi:10.3390/coatings9060404
- Ali. A, Ali. S, Alam. K, Ali. W, Khan. N, Manzoor. S, Holman. Z, Arif. M. Efficient Polymer scattering layers fabrication and their applications in electrical properties enhancement of Perovskite/silicon Tandem Solar cells. Key engineering materials. Doi: <u>10.4028/www.scientific.net/KEM778.283.</u>
- Alam. K, Sahar. S, Ali. S, Humayun. M, (2018). Silica nanoparticles coatings with self- cleaning and antireflective properties for PV modules. 2018 IEEE 21st International Multi-Topic Conference (INMIC), Karachi, 2018, pp. 1-5,

DIGITAL SKILLS

MATLAB&Simulink | Aspen HYSYS| Aspen & Aspen Plus Basics

LANGUAGE SKILLS

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING	
	Listening	Reading	Spoken production Spoken interaction			
ENGLISH	C2	C1	C1	C1	C1	
ENGLISH	C2	C1	C1	C1	C1	

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

HONOURS AND AWARDS

13/11/2022

Won project entitled "Production of innovative films containing tranexamic acid by electrospinning for beauty mask application" as Principle Investigator (PI) – Sapienza University of Rome

Other Awards

- Won Fully funded fellowship position at La Sapienza University of Rome for international students.
- Exchange research scholar to United states of America in Master studies
- Fully funded academic scholarship for Master studies.
- Won second best research project award in the Final Year Project Presentation, held in UET Peshawar in June, 2014.
- Won Fauji foundation scholarship in intermediate and bachelors studies in University.