



Maoz Maoz

Passport: [REDACTED] | Permit (Italy) | Date of birth: 13/10/1990 | Nationality: [REDACTED]
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* ABOUT MYSELF

Nanomaterials researcher specializing in the development of scalable colloidal nanocrystals, thin films, and nanocomposite systems for photovoltaic and optoelectronic applications. Expertise includes functional oxide coatings, polymer based nanocomposites, quantum dot engineering, and plasmonic nanostructures. With strong emphasis on performance driven materials design, process integration, and device level validation.

* WORK EXPERIENCE

06/01/2020 - 30/10/2022 - PESHAWAR, PAKISTAN

LAB ENGINEER ENERGY ENGINEERING, US PAKISTAN CENTRE FOR ADVANCE STUDIES IN ENERGY, UET PESHAWAR

- Led laboratory demonstrations and delivered hands-on training for undergraduate students in material synthesis and advanced material characterization laboratories
- Conducted comprehensive material characterization using SEM, XRD, AFM, DSC, and TGA to support experimental research objectives
- Investigated optical properties of materials using UV-Vis and photoluminescence spectrophotometry
- Contributed to selection, evaluation, and technical upgrading of laboratory equipment to enhance research capabilities and experimental accuracy

31/03/2019 - 31/05/2020 - PESHAWAR, PAKISTAN

ENERGY ENGINEER CREATIVE ENGINEERING AND MANAGEMENT SERVICES (CEMS)

Sustainable Energy Initiative for Industry in Pakistan funded by United Nation Industrial Development Organization UNIDO

Implementation of Energy Management System within ten organizations in the KPK and Baluchistan region, aiming at energy optimization interventions and ISO 50001:2018 certification

31/03/2018 - 27/03/2019 - PESHAWAR, PAKISTAN

PROJECT ENGINEER JOINT PROJECT OF PAKISTAN AIR FORCE AND UET, PESHAWAR FUNDED BY HIGHER EDUCATION COMMISSION (HEC)

Condition Monitoring and Predictive Maintenance of Fighter Aircraft Hydraulic System using Machine Learning Algorithm

Team lead of a team of two mechanical engineers and worked on domain aspects of aircrafts in implementation of artificial intelligence (AI) and big data analytics techniques

Root cause analysis and inquiry into machine health

Progress reports writing and presenting the progress to the funding agency

31/05/2017 - 25/03/2018 - PESHAWAR, PAKISTAN

PROJECT ENGINEER CREATIVE ENGINEERING AND MANAGEMENT SERVICES (CEMS) PAK

The project was joint project between Fauji Fertilizer Company Ltd and CEMS. The aim of the project was performance analysis and enhancement of FFCEL Wind power plant at Jhumpir. Data analysis of the data consisting of wind roses, power roses, power production, wake effect identification, mean monthly power

comparison for individual turbines resulting in identification of least performing turbines.

31/05/2017 - 25/03/2018 - PESHAWAR, PAKISTAN

RESEARCH ASSISTANT JOINT RESEARCH PROJECT OF UET, PESHAWAR AND ARIZONA STATE UNIVERSITY

Joint Research project of UET and ASU "Social and Hydrological Research to Improve Impact of Distributed Energy on Sustainable Development

and Poverty Alleviation in KPK. Funded by USPCAS-E USAID (\$30,000 + \$40,000)

- Conduct surveys of Micro-hydro power projects installed in the Khyber Pakhtunkhwa.
- Compile, document, and analyse the outcomes of the surveys conducted.
- Write reports pertinent to the outcome of the project.
- Conduct tests and performance measurement of the plants for optimum performance.

✧ **EDUCATION & TRAINING**

01/11/2022 - Current - TRIESTE, ITALY

PHD IN PHOTOVOLTAICS- UNIVERSITY OF SALERNO & UNIVERSITY OF TRIESTE

- Synthesis of colloidal Cs based perovskites, core shell CdSe/CdS and ZnInSe/ZnSe QDs and other nanocomposites and its application for solar cells.
- Fabricated silica encapsulated perovskite quantum dot composite coatings for luminescence downshifting and antireflection, improving thermal stability and silicon solar cell efficiency.
- Investigated plasmon enhanced photoluminescence in colloidal quantum dot thin films using gold nanoparticles for optical performance enhancement.
- Performed thermal and optical modelling of quantum dot downshifting layers to reduce thermalization losses and improve photovoltaic module efficiency.
- Applied deep learning based temperature prediction models to support thermal management and performance optimization of photovoltaic systems.

Thesis: Nanomaterial Based Functional Coatings for Enhanced Performance, Stability, and Thermal Management in Photovoltaic Devices

31/10/2015 - 22/11/2018 - PESHAWAR, PAKISTAN

M.SC. MATERIALS FOR ENERGY STORAGE AND CONVERSION- USPCAS-E, UET PESHAWAR

Address: 25000 | **Website:** uspcase.uetpeshawar.edu.pk

31/10/2009 - 19/10/2013 - PESHAWAR, PAKISTAN

B.SC. INDUSTRIAL ENGINEERING- UET, PESHAWAR

Address: 25000 | **Website:** uetpeshawar.edu.pk

03/04/2005 - 15/06/2007 - LAKKI MARWAT, PAKISTAN

F.SC. PRE-ENGINEERING- WORKING FOLKS GRAMMAR HIGHER SECONDARY SCHOOL

31/03/2004 - 04/03/2005 - LAKKI MARWAT, PAKISTAN

SSC (SCIENCE)- WORKING FOLKS GRAMMAR HIGHER SECONDARY SCHOOL

✧ **PUBLICATIONS**

Photoluminescence Enhancement in CdSe/CdS Quantum Dot Colloidal Films Induced by Gold Nanoparticles(AuNPs)

Maoz Maoz, Syed Abdul Basit, Shah Vanni Lught American Chemical Society ACS Omega

Recent Advances in Flexible Solar Cells: Materials, Fabrication, and Commercialization 2025

Antireflection, Superhydrophilic Nano-Porous SiO₂ Coating based on Aerosol Impact Spray Deposition Technique for Solar PV Module

Coatings 2019, Volume 9, Issue 8, 497.

Parametric Optimization of Earth to Air Heat Exchanger Using Response Surface Method 2019

Sustainability, vol. 11, no. 11, p. 3186, Jun. 2019. [DOI: 10.3390/su11113186] [Impact Factor: 2.07.

➤ **RESEARCH EXCHANGE AND RESEARCH MOBILITY**

29/08/2025 - 29/11/2025

Visiting Researcher at Sustainable Energy Systems, KFUPM, Dhahran, Saudi Arabia

Synthesis of colloidal perovskite QDs and its application as luminescent downshifting layer for Si Solar cells performance enhancement

13/01/2017 - 03/05/2017

Research Scholar at PV Materials Lab, Arizona State University, USA

Holmans Lab, Arizona State University, U.S.A.

- Antireflection, Super hydrophilic Nano-Porous SiO₂ Coating
- Material characterization using Scanning Electron Microscopy, XRD, Ellipsometry, Optical Profilometer, Spectrophotometer.
- Integration into PV modules on lab level.

28/01/2017 - 03/05/2017

Entrepreneurship Course Certificate

Course on Entrepreneurship

Presented idea related to the energy crises of Pakistan using the indigenous resources.

➤ **CONFERENCES & SEMINARS**

02/12/2025 - 03/12/2025: The Conference of Green Energy, Solar Energy, Green Hydrogen and AgroTec in MENA Region, Jordan

Scenario-Based Thermal and Optical Analysis of CdSe/CdS Quantum Dot Downshifting Layers for Enhanced Efficiency in Silicon Photovoltaic Modules Using ANSYS

Sustainable and Low-cost Heating and Cooling Solution for Buildings *International Conference on Professional Trends in Industrial and System Engineering*, ISBN No: 978-969-23294-0-8; April, 2018.

Micro Hydro Power Projects: A Socio-technical Survey to Kafam, District Swat, Pakistan *5th International Conference on Energy, Environment and Sustainable Development*, ISBN No: 978-969-7710-02-7, Nov. 2018.

Arizona State University, USA

Energy Policy Workshop By Professor: Clarke Miller

Serene Hotel, Islamabad

PV Reliability and Certification Workshop By Professor: T. Mahi

NUST, Islamabad

Fuel Cells and Batteries Workshop By Professor: Kenan

➤ **SCHOOLS**

09/09/2024 - 13/09/2024

Summer School in Raw materials on PV Photovoltaics

Best team Project award

06/06/2023 - 10/09/2025

Summer School on Energy "Giacomo Ciamician"

Write here the description...

❖ **SKILLS**

Programmin language MATLAB | Microsoft Office | AutoCAD | Website Development | Python for data science

❖ **LANGUAGE SKILLS**

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH	C1	B2	C1	B2	C1

❖ **HOBBIES AND INTERESTS**

Hobbies and interests Web Development, Articles reading, Social gatherings

❖ **RECOMMENDATIONS**

Lughi Vanni PhD supervisor

Full Professor

Department of Engineering and Architecture

University of Trieste

Email vlughi@units.it

Syed Abdul Basit Shah Research Collaboration

Department of Engineering and Architecture

University of Trieste

Email syedabulbasit.shah@phd.units.it

Amir Al-Ahmed Supervisor

Research Scientist I, Interdisciplinary Research Center for Sustainable Energy Systems

KFUPM, Dhahran, Saudi Arabia

Email aalahmed@kfupm.edu.sa

❖ **COMMUNICATION AND INTERPERSONAL SKILLS**

Communication and Interpersonal Skills

Active Listener, Effective Verbal and non-Verbal Communication, Presentation, Emails Communication, Survey Conduction, Engaging Stakeholders, Consistent, Perseverance