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Academic Qualifications

- **PhD:** **In-situ Synthesis and Dissolution of Functional Nano Materials For Engineering and Biomedical Applications**
Materials Science and Engineering Department, The University of Sheffield, Sheffield, UK
- **M-E:** **Materials Engineering**
NED University of Engg. & Tech. Karachi, Pakistan
- **B-E:** **Metallurgy & Materials Engineering**
Dawood University of Engineering & Technology, Karachi, Pakistan
- **HSC:** **Pre - Engineering**
Malir Cantt Govt Science College, Karachi, Pakistan
- **SSC:** **Science,**
P.I.A Model P& S School, AirPort Karachi, Pakistan

Research Area

- **Nano Technology, In-Situ Synthesis of nano structures in Liquid Cell TEM**
- **In-situ dry irradiation of precursors in TEM**
- **Synthesis of Functional (Ceramic and metallic) Nano Materials for engineering i.e. Energy, Corrosion, Textile and Biomedical applications.**
- **Characterisation of Advanced materials**
- **Non-Destructive Testing, Melting and Casting, Manufacturing,**
- **Extraction of Minerals from Ore**

Working Experience

1. NED UNIVERSITY OF ENGINEERING & TECHNOLOGY

- **Associate Professor** in Materials Engineering Department from **06th October 2025 to date**
- **Assistant Professor** in Materials Engineering Department from **10th April 2012 to 5th October 2025**
- Joined as **Lecturer** in Materials Engineering Department from **30th April 2008 to 9th April 2012**

2. ATLAS HONDA ENGINEERING, FORMERLY ALLWIN ENGINEERING INDUSTRIES

Production Engineer

May, 2007 to April, 2008

Consultancy Experience

1. **Key Stone Minerals**, As a Consultant for Ore Extraction and Purification, **April 2021 to till Date**
2. **Green Gate Pvt. Ltd**, As a Consultant for Copper Ore Extraction and Purification through Electro winning **October 2024 to till Date**
3. **Pattern Craft Engineering and Foundry**, As a Consultant for materials casting and Characterisation, **January 2019 to till Date**

Lab Development Experience

1. **Nano Material Lab** developed in 2022 from the IRP NED, funds.

Capability: Synthesis of all type of ceramic and metallic nano structures materials by chemical and green methods.

Equipment's: Precision Temperature controlled Magnetic Stirrer, Programmable Sintering Oven (RT to 400°C), UV Photo Spectrometer, DC Power supply, Vacuum Filtration setup, Precision balance (0.0001 g), Centrifuge machine (up to 16000 RPM), Hotplate and blower, Low Temperature Chemical storage Cabinet, Ultrasonic Mixer, Water Distillation Plant.

3. **Copper Extraction and Purification Lab** Copper Ore Processing and Purification

2. **Electron Microscopy Lab Establishment: Installation and commissioning of FEI Quanta 200**

3. **DSC and TGA Lab Establishment: Installation and commissioning of TA 600**

4. **Non Destructive Testing Laboratory Establishment:** Equipment's Eddy Current, Ultrasonic, Magnetic Particle analyzer, and Dye penetrant method.

Other Experiences

2010 to Date Member/Secretary Board of Studies, NED University of Engineering & Technology

2018 to Date Member/Secretary Industrial Advisory Board of MMD, NED University of Engineering & Technology

2011 to date **Final Year Design Project Coordinator**, Department of Materials Engineering, NED University of Engineering & Technology

2012 to 2014 M. Engg Coordinator, Department of Materials Engineering, NED University of Engineering & Technology

2011 to 2014 PEC Coordinator, Department of Materials Engineering, NED University of Engineering Technology

2010 to 2014 Area Coordinator, Department of Materials Engineering, NED University of Engineering & Technology

2009 to date Class Advisor (BE) Department of Materials Engineering, NED University of Engineering & Technology

International Research Publication

1. **Asghar, M.S.A.**; Inkson, B.; Möbus, G., In situ formation of 1D nanostructures from ceria nanoparticle dispersions by liquid cell TEM irradiation, Journal of Materials Science, 2019. (<https://doi.org/10.1007/s10853-019-04140-0>)

2. **Asghar, M. Sajid Ali**¹, Inkson, Beverley¹, Seal, Sudipta², Molinari, Marco ³, Sayle, Dean⁴, Möbus , Günter¹, In-situ observation of radiation chemistry of nanostructured cerium oxide in water. *Mater. Res. Express* Vol. 6, Issue No. 1 (2018) 015032 (<https://doi.org/10.1088/2053-1591/aae634>).
3. **Asghar, M.S.A.**; Inkson, B.; Möbus, G. Giant radiolytic dissolution rates of aqueous ceria observed insitu by liquid-cell TEM. *ChemPhysChem* **2017**, 18, 1-6. (doi :10.1088/1742-6596/902/1/012004)
4. **Asghar, M.S.A.**; Sabri, M. Mohammad; Tian, Z. ; and Möbus, G, “In-situ irradiation of cerium precursors in TEM to study nanocrystal formation” *Journal of Physics: Conference Series*, Volume 902, conference 1. 2017, (<http://iopscience.iop.org/article/10.1088/1742-6596/902/1/012003>)
5. **Asghar, M.S.A.**; Inkson, B.; Möbus, G. “Ceria-Water-Reactions Studied by Liquid Cell TEM” *Journal of Physics: Conference Series*, Volume 902, conference 1. 2017, (<http://iopscience.iop.org/article/10.1088/1742-6596/902/1/012004>)
6. Muhammad Ali Siddiqui, **Muhammad Sajid Ali Asghar**, Syed Shahzaib Alam, Nimra Iqbal, Ihsan Ullah, Junxiu Chen, Muhammad Ali Shar, Abdulaziz Alhazaa, Ke Yang, Sajid Hussain Siyal, “Synthesis and Characterization of PVA/CS Reinforced TiO2 Composite Coating on the Biodegradable Magnesium Alloy, *Journal of Materials Engineering and Performance*, J. of Materi Eng and Perform (2025). <https://doi.org/10.1007/s11665-025-10930-2>
7. **M. Sajid Ali Asghar**, Umer Hussain, Muhammad Ovais, Shaheer Ahmed Khan, Abdul Aabid, Muneer Baig, Mohammad Abdul Malik, Development of Corrosion-Resistant Hydrophobic Zn/ZnO Composite Coatings on Steel Substrates, *Materials Research Express*, IOP, **12**, 026401, 24th January, 2025, DOI 10.1088/2053-1591/adae5b
8. Muhammad Amir and **Muhammad Sajid Ali Asghar**, Synthesis and application of WO3/PVA nano composite for antibacterial and thermal insulation, 2024 *Mater. Res. Express*, 11, 115003. (<https://doi.org/10.1088/2053-1591/ad8a1f>)
9. **M. Sajid Ali Asghar**, Amir, Muhammad; Farooq, Umer; Hasany, Syed Farhan, “Wet fabrication of Nanostructured Tungsten and Magnesium oxide additives to enhance Nickel nanocomposite coatings’ surface properties of EN ISO 4957 Tool Steel” *Advanced Engineering Materials*, 2025, (Publication In-process)
10. **M. Sajid Ali Asghar**, Abdul Rauf Jamali, Waseem Khan; Abdalrahman Alajmi; Abdellatif M. Sadeq; Muhammad Ovais, Green Synthesis of Corrosion Resistant Hydrophobic Zn/CaO Nanocomposite Coatings on SAE 1020 Steels. *Springer, Arabian Journal for Science and Engineering* 2025, (Publication In-process)
11. Amir, Muhammad, **M. Sajid Ali Asghar** and Saeeda Nadir Ali, Synthesis Characterization and antimicrobial properties of cotton fabric loaded with green synthesized Salica nano particles, *Jurnal Kejuruteraan*, in Vol-36 issue (2) March 2024.
12. **M. Sajid Ali Asghar**, Muhammad Amir, Umer Hussain, Mohammed M. Sabri, Zinc and graphene oxide composites as new protective coatings for oil and gas pipes. *Polimery* 68, no. 7-8 (2023). DOI: <https://doi.org/10.14314/polimery.2023.7.3>
13. Amir, Muhammad, Syed Farhan Hasany, and **M. Sajid Ali Asghar**. "Modification of bentonite nanoclay for textile application." *Polimery* 68, no. 2, DOI (2023). DOI: <https://doi.org/10.14314/polimery.2023.2.1> .
14. Abdul Rauf Jamali, Madhia Batool, **M. Sajid Ali Asghar**, Faheem Akhter, Fayaz Hussain & Shazia Khurshid, Synthesis of green metaloxide Nanoparticles using Aloe-Barbadensis Leaf Extract (Acid Red 28) for Dye Removal Applications, *Jurnal Kejuruteraan* 34(5) 2022: 801-805. <https://www.ukm.my/jkukm/volume-3405-2022/>

15. M. Tayyab, M. Mutahir, **M. Sajid Ali** and A. Ali, Synthesis and characterization of mechanically milled nanocomposites—carbon nanotube reinforced aluminium. Nanotechnology Perceptions 10 (2014) 54–60, <https://doi.org/10.62441/nanotnp.v10i1.100>
16. Faaz Ahmad Butt, M. Sohail Hanif, **Asghar, M.S.A**, Synthesis of Metal sulfide (Cu and Ni) for Hydrogen evolution reaction (Her) and Carbon dioxide reduction (CO₂R), AMPE-2019 NEDUET, 2019
17. **Asghar, M.S.A**, Faaz Ahmad Butt, M. Sohail Hanif, Synthesis of SiO₂ Nanoparticles by solgel method for energy applications, AMPE-2019 NEDUET, 2019
18. **Sajid Ali Asghar**, Fawad Tariq, A. Ali, ‘Failure Analysis of AISI-304 Stainless Steel Styrene Storage Tank’ Muhammad Sajid Journal of Failure Analysis (Springer) Published online: 30 April 2010, ASM International 2010.

Conference

1. Asghar, M.S.A., Inkson, B., Möbus, G. “In-situ generation of nanoparticles by electron irradiation” University of Sheffield Engineering Symposium, Sheffield, UK, 24 June 2015.
2. Asghar, M.S.A., Möbus, G. “In-situ Liquid cell TEM Examination of Ceria Nanoparticles” Engineering Researcher Symposium 2017, University of Sheffield, Sheffield, UK, 30 June 2017.
3. Asghar, M.S.A.; Inkson, B.; Möbus, G. “In-situ dissolution of ceria nanoparticles in liquid-cell TEM”. MMC2017- EMAG, Manchester, UK, 3-6 July, 2017.
4. Asghar, M.S.A.; Sabri, M. Mohammad; Tian, Z. ; and Möbus, G, “In-situ irradiation of cerium precursors in TEM to study nanocrystal formation” MMC2017- EMAG, Manchester, UK, 3-6 July, 2017
5. Asghar, M.S.A.; Inkson, B.; Möbus, G. “In-situ dissolution study of cerium oxide nanoparticles in liquid-cell TEM”. The 11th International Nanoscience Student conference (INASCON), Wills Hall, The University of Bristol, Bristol, UK, 21-24 August 2017.
6. Asghar, M.S.A.; Inkson, B.; Möbus, G. “In Situ TEM imaging of ceramics nanoparticles in aqueous environment”, Microscopy and Microspectroscopy of nanomaterials in Liquids, Plasma Institute, The University of York, UK, 18 September 2017.

Research Projects

1. Synthesis and Characterisation of SiO₂ NPs for gas sensor
2. Surface modification of Ti alloy with bioactive glass nanoparticles via Plasma Electrolytic Oxidation for Healthcare Applications.
3. Fabrication of Antimicrobial nano structure coatings for engineering and biomedical applications.
4. Synthesis and Characterisation of CaO and TiO₂ Nano materials for corrosion.
5. Synthesis and Characterisation of MgO Nano materials by chemical and Green method.
6. Synthesis and Characterisation of WO₃ Nano materials for wear and tear and thermal insulations.

International Trainings

- Advanced Training of **TEM Liquid Cell Holder with EDX**, The University of York, UK, August, 2017

- Operational Training of **TEM Liquid Cell Holder**, The University of Sheffield, UK, 2015
- **Image-J software** Training, UK MMC-2017, 1-4 July 2017
- **High Resolution Electron Microscopy** Training, UK 2014
- **Electron Energy Loss Spectroscopy (EELS)** Training, UK 2015
- **Transmission Electron Microscope (JSM200 and JSM 310)** Trainings, UK 2015
- **TEM Heating Holder** operational Training, UK 2015
- **XRD Training** UK 2015
- **Scanning Electron Microscopy** Training, UK 2014
- **X-Ray Fluorescence Spectroscopy (XRF) InovXsystem Netherlands** Operational and Routine Maintenance Training of Portable XRF, 2011.
- **Laser Work Station** Operational MICOS GMBH, Germany May, 2010.

Other Trainings

- Installation and Operational Training of **Scanning Electron Microscope, FEI Quanta 200**
- Installation and Operational Training of **Energy Dispersive Spectroscopy EDS System (OXFORD)**
- Operational Training of Portable **Phenom** for Optio-Electron Imaging
- Operational Training of **Olympus & Leica** Optical Microscope
- Installation and Operational Training of **Carbon Sulphur(CS 230)** Rapid Analyser
- Operational Training of **Ultrasonic, Eddy Current and Magnetic Particle**
- Operational Training of **TEM and STEM** in NIBJE, Faislabad, Pakistan

Certification & Memberships

- **Ultrasonic Testing Manufacturer Training certification from UK**
- **Ultrasonic Testing Level-II Training certification**
- **Level 1 Eddy Current** Testing From NCNDT Islamabad
- Member of **Pakistan Engineering Council**
- Member of **Nano Materials Research Group NMR, Materials Department NEDUET**

References

1. **Dr. Anis Fatima**,
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Houghton, MI 49931, USA
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