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Current Position

Associate Professor

Department of Materials Engineering

NED University of Engineering and Technology

Since October 2025

Education

PhD (Materials Science and Engineering)

Istanbul, Turkiye

KOC University

2015-2019

M.Engg. (Materials Engineering)

Karachi, Pakistan

NED University of Engineering and Technology

2012-2014

B.E. (Metallurgical Engineering)

Karachi, Pakistan

NED University of Engineering and Technology

2008-2011

Professional Career

Associate Professor- NED University of Engineering and Technology- October 6, 2025 to Present

My main responsibilities include:

- Teaching courses
- PhD Approved Supervisor
- Supervising various graduate and undergraduate level research projects.
- Lab Incharge- Hydrogen Generation Lab.
- Additional assignment as Deputy Director Quality Enhancement Cell.

Assistant Professor- NED University of Engineering and Technology- 20th, November 2019 to October 5, 2025

My main responsibilities include:

- Teaching courses at undergrad level and postgraduate level.
- PhD Approved Supervisor
- Supervising various graduate and undergraduate level research projects.
- Lab Incharge- Hydrogen Generation Lab.
- Additional assignment as Deputy Director Quality Enhancement Cell.

Lecturer- NED University of Engineering and Technology- 5th, April 2012 to 19th, November 2019

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My main responsibilities were as follows,

- To conduct laboratory sessions of undergraduate students.
- Preparing course materials and conducting theory classes with senior faculty members.
- Advising students for their final year undergraduate thesis projects.
- Working with industry for testing of their samples.

Courses Taught

- Spring 2025- Materials Characterization and Analytical Techniques (MM-308)
- Jan 2025- ISO Quality Management and Audit Certification (Course 5)
- Fall 2024- Advanced Materials Characterization Techniques (MM-505)
- Fall 2024- Surface Engineering (MM-412)
- Spring 2024- Materials Characterization and Analytical Techniques (MM-308)
- Fall 2023- Phase transformation in materials (MM501)
- Fall 2023- Surface Engineering (MM-412)
- July 2023- ISO Quality Management and Audit Certification (Course 5)
- Spring 2023- Advanced Materials (MY-402)
- Spring 2023- Materials Characterization and Analytical Techniques (MM-308)
- Feb 2023- ISO Quality Management and Audit Certification (Course 5)
- Fall 2022- Surface Engineering and Coating Technologies (MM-531)
- Fall 2022- Heat Treatment (MM-304)
- Fall 2022- Surface Engineering (MM-412)
- Spring 2022- Advanced Materials (MY-402)
- Spring 2022- Materials Characterization and Analytical Techniques (MM-308)
- Fall 2021- Environmental Engineering and Solar Energy Systems (MM-605)
- Fall 2021- Nanotechnology (MM-534)
- Fall 2021- Surface Coatings (MM412)
- Spring 2021- Advanced Materials Characterization Techniques (MM-601)
- Spring 2021- Materials Characterization and analytical techniques (MM-308)

Research Grants and Projects

1. **Principal Investigator**- Study of hydrogen evolution reaction on noble metal surfaces- Rs. 1 million, ASRB NEDUET- 2021-2022
2. Co-Principal Investigator - Development of efficient energy storage devices- Rs. 15.7million, HEC NRPU- 2021-2023
3. **Principal Investigator** - Development of reference electrodes for electrochemical experiments- Rs. 5.4million, HEC NRPU- 2023-2025
4. **Principal Investigator** - Development of cathode materials for ion batteries- Rs. 3.2million, Sindh HEC, 2023-2025

5. **Principal Investigator** - Development of sodium iron phosphate cathodes for batteries- Rs. 1million, ASRB NEDUET, 2023-2025
6. **Principal Investigator** - Development of Mo based cathodes for HER, Rs. 1 million, ASRB NEDUET, 2022-2024
7. Co-Principal Investigator - Development of Mo based mexenes for air batteries, Rs. 1 million, ASRB NEDUET, 2023-2025

Present Research Focus

- Sodium Ion batteries (Cathode/anode material synthesis and cell assembly, laboratory development)
- Metal air batteries (Cathode development, Titanium and molybdenum based max phases, battery development and battery testing)
- Hydrogen generation (nickel and molybdenum-based catalyst development and their testing for hydrogen generation)

Supervising following research

- PhD Student on Molybdenum based max phase synthesis for metal air batteries.

Awards

- Recipient of competitive PhD scholarship under Faculty development program by HEC in September 2015 for four years to pursue doctoral studies at KOC University, Turkey.

Publications

1. Khan, S.Y. and **Butt, F.A.**, 2025. One-Step Solvothermal Synthesis of Maricite Phase Sodium Iron Phosphate (NaFePO₄) Cathode Material for Sodium-Ion Batteries. **Journal of Electronic Materials**, 54(7), pp.5392-5403.
2. Memon, M.A., **Butt, F.A.** and Nadeem, S., Electrocatalytic properties of MoS₂ synthesized using molybdenum foam for hydrogen evolution reaction. **Journal of the Chinese Chemical Society**.
3. Naqvi, Asad A; Nadeem, Talha Bin; Ahmed, Ahsan; **Butt, Faaz Ahmed**; Effective Utilization of Solar Energy for the Production of Green Hydrogen from Photovoltaic Powered Electrolyzer, **Journal of Testing and Evaluation**, 52, 1, 2024.
4. Su, Meng-Yuan; Zhang, Kai-Yang; Ang, Edison Huixiang; Zhang, Xue-Li; Liu, Yan-Ning; Yang, Jia-Lin; Gu, Zhen-Yi; **Butt, Faaz A**; Wu, Xing-Long; Structural regulation of coal-derived hard carbon anode for sodium-ion batteries via pre-oxidation, **Rare Metals**, 43, 6, 2585-2596, 2024.
5. Cao, Jun-Ming; Ma, Ming-Yang; Liu, Han-Hao; Yang, Jia-Lin; Liu, Yue; Zhang, Kai-Yang; **Butt, Faaz A**; Gu, Zhen-Yi; Li, Kai; Wu, Xing-Long; Interfacial-Confined Isochronous

- Conversion to Biphasic Selenide Heterostructure with Enhanced Adsorption Behaviors for Robust High-Rate Na-Ion Storage, **Small**, 20, 11, 2311024, 2024.
6. Khan, Shehroze Tahir; Akhtar, Maaz; Mehdi, Murtuza; Malik, Nauman; Hashmi, Saud; **Butt, Faaz**; Characterizations of a cost-effective single component polymer for stretchable and flexible microelectromechanical systems applications, **Journal of Testing and Evaluation**, 51, 2, 495-508, 2023.
 7. Ahmad, Faheem; Azam, Farooq; **Butt, Faaz Ahmed**; Rasheed, Abher; Nawab, Yasir; Ahmad, Sheraz; Synthesis of Composite Hydrogel Made of Woven Fabrics Stitched with PVA Yarn, **Advances in Materials Science and Engineering**, 2023, 1, 9941460, 2023.
 8. **Butt, Faaz Ahmed**; Alshahrani, Thamraa; Awan, Zahoor Ul Hussain; Christy, Maria; Khan, Firoz; Alanazi, Abdulaziz M; Unal, Ugur; Electrochemical CO₂ reduction to gaseous methane and carbon monoxide using plasma-synthesized copper nanowires, **Journal of Solid State Electrochemistry**, 14-Jan, 2023.
 9. Masud, Shah Fahad Bin; Hassan, Muhammad; **Butt, Faaz Ahmed**; Singh, Ram Sarup; Khoja, Asif Hussain; Anwar, Mustafa; Ahmad, Waqas; Methane refinement by iron oxide, packed column water scrubbing, and activated charcoal scrubbing techniques, **Waste and Biomass Valorization**, 13-Jan, 2022.
 10. Arif, Muhammad Naveed; Waqas, Adeel; **Butt, Faaz Ahmed**; Mahmood, Mariam; Khoja, Asif Hussain; Ali, Majid; Ullah, Kafait; Mujtaba, MA; Kalam, MA; Techno-economic assessment of solar water heating systems for sustainable tourism in northern Pakistan, **Alexandria Engineering Journal**, 61, 7, 5485-5499, 2022.
 11. Naqvi, Asad A; Zahoor, Awan; Shaikh, Asif Ahmed; **Butt, Faaz Ahmed**; Raza, Faizan; Ahad, Inam Ul; Aprotic lithium air batteries with oxygen-selective membranes, **Materials for Renewable and Sustainable Energy**, 11, 1, 33-46, 2022.
 12. Naeem, Nida; Khoja, Asif Hussain; **Butt, Faaz Ahmed**; Arfan, Muhammad; Liaquat, Rabia; Hasnat, Amin Ul; Partial oxidation of methane over biomass fly ash (BFA)-supported Ni/CaO catalyst for hydrogen-rich syngas production, **Research on Chemical Intermediates**, 48, 5, 2007-2034, 2022.
 13. Sarmad, Qassam; Khan, Uneeb Masood; Baig, Mutawara Mahmood; Hassan, Muhammad; **Butt, Faaz Ahmed**; Khoja, Asif Hussain; Liaquat, Rabia; Khan, Zuhair S; Anwar, Mustafa; SA, Muhammed Ali; Praseodymium-doped Sr₂TiFeO_{6-δ} double perovskite as a bi-functional electrocatalyst for hydrogen production through water splitting, **Journal of Environmental Chemical Engineering**, 10, 3, 107609, 2022.
 14. Ayesha, Mariam; Khoja, Asif Hussain; **Butt, Faaz Ahmed**; Sikandar, Umair; Javed, Ahad Hussain; Naqvi, Salman Raza; Mehran, Muhammad Taqi; Sorption enhanced steam reforming of methane over waste-derived CaO promoted MgNiAl hydrotalcite catalyst for sustainable H₂ production, **Journal of Environmental Chemical Engineering**, 10, 3, 107651, 2022.

15. Ahmed, Ghadia; **Butt, Faaz Ahmed**; Raza, Faizan; Hashmi, Saud; Kumar, G Gnana; Christy, Maria; The study of different redox mediators for competent Li–air batteries, **Journal of Power Sources**, 538, 231379, 2022.
16. Awan Zahoor, Asad A. Naqvi, **Faaz A. Butt**, Ghazanfar R. Zaidi and Muhammad Younus; Effect of graphene oxide on polyvinyl alcohol membrane for textile wastewater treatment, **Membrane Water Treatment**, 13, 3, 121-128, 2022.
17. Asad, Samra; Zahoor, Awan; **Butt, Faaz Ahmed**; Hashmi, Saud; Raza, Faizan; Ahad, Inam Ul; Hakami, Jabir; Ullah, Sami; Al-Ahmed, Amir; Khan, Firoz; Recent Advances in Titanium Carbide MXene (Ti₃C₂T_x) Cathode Material for Lithium–Air Battery, **ACS Applied Energy Materials**, 5, 10, 11933-11946, 2022.
18. Lodi, Sarosh; Shaikh, Asif; Wasif, Muhammad; Tufail, Muhammad; **Butt, Faaz**; A quality 4.0 assurance framework for the higher education institutes, 8th International **Conference on Higher Education Advances** (HEAd'22), 725-732, 2022.
19. Mansoor, Afsheen; Khurshid, Zohaib; Khan, Muhammad Talal; Mansoor, Emaan; **Butt, Faaz Ahmad**; Jamal, Asif; Palma, Paulo J; Medical and dental applications of titania nanoparticles: an overview, **Nanomaterials**, 12, 20, 3670, 2022.
20. **Butt, Faaz Ahmed**; Anwar, Mustafa; Unal, Ugur; Synthesis of metallic copper nanowires using dielectric barrier discharge plasma and their application in hydrogen evolution reaction, **International Journal of Hydrogen Energy**, 2021.
21. Zahoor, Awan; Faizan, Raza; Elsaid, Khaled; Hashmi, Saud; **Butt, Faaz Ahmed**; Ghouri, Zafar Khan; Synthesis and experimental investigation of δ -MnO₂/N-rGO nanocomposite for Li-O₂ batteries applications, **Chemical Engineering Journal Advances**, 7, 100115, 2021.
22. Ahmad, Faheem; Mushtaq, Bushra; **Butt, Faaz Ahmed**; Rasheed, Abher; Ahmad, Sheraz; Preparation and characterization of wool fiber reinforced nonwoven alginate hydrogel for wound dressing, **Cellulose**, 28, 7941-7951, 2021.
23. Hasnain, Muhammad Anees Ul; Khoja, Asif Hussain; **Butt, Faaz Ahmed**; Ayesha, Mariam; Saleem, Faisal; Mehran, Muhammad Taqi; Liaquat, Rabia; Ali, Majid; Zaki, Zaki Ismail; Partial oxidation of methane over CeO₂ loaded hydrotalcite (MgNiAl) catalyst for the production of hydrogen rich syngas (H₂, CO), **International Journal of Hydrogen Energy**, 46, 74, 36663-36677, 2021.
24. Ahmad, Faheem; Mushtaq, Bushra; **Butt, Faaz Ahmed**; Zafar, Muhammad Sohail; Ahmad, Sheraz; Afzal, Ali; Nawab, Yasir; Rasheed, Abher; Ulker, Zeynep; Synthesis and characterization of nonwoven cotton-reinforced cellulose hydrogel for wound dressings, **Polymers**, 13, 23, 4098, 2021.
25. Javed, Ahad Hussain; Shahzad, Nadia; **Butt, Faaz Ahmed**; Khan, M Abdullah; Naeem, Nida; Liaquat, Rabia; Khoja, Asif Hussain; Synthesis of bimetallic Co-Ni/ZnO nanoprisms (ZnO-NPr) for hydrogen-rich syngas production via partial oxidation of methane, **Journal of Environmental Chemical Engineering**, 9, 6, 106887, 2021.

26. **Butt, Faaz A**; Jafri, Syed M Mohsin; Effect of nucleating agents and stabilizers on the synthesis of Iron-Oxide Nanoparticles-XRD analysis, Advances in nano research, 3, 3, 169, 2015.

Responsibilities as Deputy Director QEC (November 2020 till present)

- Yearly Progress Reports for HEC (2022, 2023, 2024)
- MS/Ph.D. review (2021, 2022, 2023, 2024)
- Self-Institutional Performance Evaluation (2021, 2022, 2023)
- University portfolio report (UPR) (2021, 2022, 2023)
- CIEC-Sind HEC Inspection Visit (Feb 2022)
- Audits (Internal/Surveillance -2021, 2022, 2023, 2024)
- Board of Review University Level
- Member organizing committee of the International Conference on Quality in Higher Education- ICFT QAHE 2022 (April-May 2022)
- University wide Surveys
- Trainings University Wide
- Member Board of Review (University Level)
- Member Board of Review (Quality Enhancement Cell)
- Member Board of Faculties (CPE/MME)
- Member Board of Review (Procurement Cell)

Honors and Activities

- Successfully completed training on “Effective Quality Management Audits”, organized by QEC-NEDUET, December 5, 2024.
- Attended the seminar on “Revamped QA Framework: Collaborative Pathways to Sustainable Development Goals”, organized by QEC-NEDUET, dated: June 5, 2024.
- Participated in the “Progress Review Meeting and Training of the QECs on PSG 2023-IQC”, organized by QAA HEC at Agha Khan University, dated: 6-8th May 2024.
- Conducted the Post Graduate Program Review of Sir Syed University of Engineering and Technology, Karachi as external member, dated: 29-30th April 2024.
- Completed three online courses on Coursera through DELSI in the fields of batteries and quality management systems. (December 2024)
- Attended the symposium of batteries and energy storage devices at PINSTECH, Islamabad, 22-24 October 2024.
- Attended a training session on the development and characterization of advance batteries in North East Normal University, Jilin, China April 1 to April 5, 2024.
- Attended a course titled: Advance Machine Learning with Python- from National Center of Artificial Intelligence, NED University- February 2024 to March 2024.
- Presented a paper related to the use of AI tools to improve student satisfaction in HEIs at 4th PNQAHE Intl. Conf., Islamabad- March 3-5, 2024.

- Attended the Seminar on “Ensuring quality in Higher Education: A prospect of HEC Graduate Policy 2023”, organized by QEC-NEDUET, dated: October 5, 2023.
- Attended KEYTECH 2023, Istanbul, Turkiye, August 2023.
- Attended three-day training workshop on Quality Assurance in Higher Education by Sindh HEC, Pearl Continental Hotel, Karachi- Feb 1-3, 2023.
- Worked as Conference Secretary in the FTQAHE 2022 conference on quality assurance systems in higher education, Karachi, May 16-17, 2022.
- Attended international conference arranged by PNQAHE as a participant, "Quality Assurance in Higher Education", KhairPur, March 8-10, 2022.
- Invited Talk- "Minerals to Chemicals, Steps towards Industrialized Pakistan", Dubai Expo 2020- February 17, 2022.
- Guest Editor for Special Issue of "Materials" on "Advances in Biomedical Implants", January 2022.
- Successfully completed the ISO Lead Auditor Course ISO 9001:2015.
- Attended short course by Pakistan Engineering Council, titled: Entrepreneurship development by managing technology and innovation in water and wastewater treatment projects, April 10, 2021.
- Presented research work in the “1st International Industrial Chemistry Conference 2021”, dated: 26th- 28th February, 2021.
- Presented research work in the “3rd International Conference on Advance Materials and Process Engineering 2019”, dated: 11th -12th December 2019.
- Part of the organizing committee for the “3rd International Conference on Advance Materials and Process Engineering 2019”, dated: 11th -12th December 2019.

Other information

- I have experience of material synthesis and characterization techniques such as SEM, EDX, chromatography, X ray diffraction, Raman spectroscopy, FTIR.
- I have good experience in project management and have skills in managing HR, Procurement and Technical work.
- Countries travelled: Turkey, UAE, China, Sri Lanka.