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School of Chemical & Materials Engineering

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About

Dr. Mutawara Mahmood Baig is working as Assistant Professor in the School of Chemical & Materials Engineering. Dr. Mutawara Mahmood Baig has a PhD in Energy Storage. Dr. Mutawara Mahmood Baig has published 44 research articles & conference papers having a citation count of 1331, carried out 0 projects and filed 0 intellectual property.

Qualifications

PhD in Energy Storage NUST, Islamabad , Pakistan	2017 - 2022
MS in Catalysis NUST, Islamabad , Pakistan	2013 - 2016

Experience

Assistant Professor School of Chemical & Materials Engineering	2025- Present
Postdoctoral Researcher Yangzhou University , China	2023 - 2025
Exchange Researcher Purdue University , USA	2021 - 2021
Research Associate NUST, USPCASE , Islamabad	2019 - 2019
Process Engineer Applus Velosi, , Islamabad	2013 - 2018

Research Articles

Uniform wide-channel gel polymer electrolyte with consistent head-to-tail supramolecular arrangement for enhanced aqueous zinc-ion batteries <i>Mushtaq Ahmad Defeng Qi Hamza Ahmad Muhammad Ajmal Mutawara Mahmood Baig Kiran Khan Habib Ullah Yi Zou Li Chen Yong Wang Yin Xiao</i> <i>Journal of Power Sources</i> , Volume:632, Article Number 236369 Impact Factor: 7.900 Quartile: 1 DOI: https://doi.org/10.1016/j.jpowsour.2025.236369	2025
Direct ink writing 3D printing of low-dimensional nanomaterials for micro-supercapacitors <i>Yanan Hou Jingqi Lu Hongcheng Zhang Pin Liu Guoyin Zhu Xinlei Ge Huan Pang Yizhou Zhang Mutawara Mahmood Baig</i> <i>Nanoscale</i> , Volume:16, Issue:26, Page:12380-12396 Impact Factor: 5.100 Quartile: 1 DOI: https://doi.org/10.1039/D4NR01590H	2024
2D/2D interfacial coupling of NiFe-LDH and Ti3C2Tx for oxygen evolution reaction <i>Abdul Waheed Sadaf Siddique Mutawara Mahmood Baig Muhammad Taqi Mehran Muhammad Ittikhar Jamil Ahmad Hassan A. Arafat Faisal Shahzad</i> <i>International Journal of Hydrogen Energy</i> , Volume:72, Page:133-140 Impact Factor: 8.300 Quartile: 1 DOI: https://doi.org/10.1016/j.ijhydene.2024.05.367	2024
Progress and prospects of MXene-based bifunctional electrocatalysts for overall water splitting in alkaline media <i>Muhammad Zubair Sadaf Siddique Syed Asad Abbas Mutawara Mahmood Baig Abdul Waheed Faisal Shahzad</i> <i>International Journal of Hydrogen Energy</i> , Volume:62, Page:994-1017 Impact Factor: 8.300 Quartile: 1	2024

DOI: <https://doi.org/10.1016/j.ijhydene.2024.03.065>

- Dielectric and thermal properties of composite radome material under accelerated aging: an experimental study** 2024
Imran Haider Iftikhar Hussain Gul Malik Adeel Umer Mutawara Mahmood Baig
Journal of Materials Science: Material in Electronics, Volume 35, article number 540,
Impact Factor: 2.8 | Quartile: 2 | Citations: 2
DOI: 10.1007/s10854-024-12098-2
- MXene decorated 3D-printed carbon black-based electrodes for solid-state micro-supercapacitors** 2023
Guoyin Zhu Yanan Hou Jingqi Lu Hongcheng Zhang Zechao Zhuang Mutawara Mahmood Baig Muhammad Zubair Khan Muhammad Aftab Akram Shengyang Dong Pin Liu Xinlei Ge Yizhou Zhang
Journal of Materials Chemistry A, Volume:11, Issue:46, Page:25422-25428
Impact Factor: 10.8 | Quartile: 1
DOI: <https://doi.org/10.1039/D3TA04573K>
- Progress and prospects in direct ammonia solid oxide fuel cells** 2023
Ali Muqaddas Mehdi Amjad Hussain Muhammad Zubair Khan Muhammad Bilal Hanif Rak-Hyun Song Wajahat Waheed Kazmi Muhammad Measam Ali Sajid Rauf Yizhou Zhang Mutawara Mahmood Baig Dmitry Medvedev Martin Motola
Russian Chemical Reviews, Volume:92, Issue:11, Article Number RCR5098
Impact Factor: 7.000 | Quartile: 1
DOI: <https://doi.org/10.59761/RCR5098>
- Synthesis and Characterization of Zr₄-Y₃+ Substituted Ba-Sr Hexaferrite Nanoparticles for Microwave Absorption and Electromagnetic Shielding Applications** 2023
Muhammad Zarrar Khan Iftikhar Hussain Gul Farhan Javaid Ahmed Ali Saiqa Hafeez Mutawara Mahmood Baig
Materials Research Bulletin, Volume:168, Article Number: 112468
Impact Factor: 5.4 | Quartile: 2 | Citations: 19
DOI: 10.1016/j.materresbull.2023.112468
- A Low-Cost Silica Fiber/Epoxy Composite with Excellent Dielectric Properties, and Good Mechanical and Thermal Stabil** 2023
Imran Haider Iftikhar Hussain Gul Adeel Umer Malik Mutawara Mahmood Baig
Materials, Volume: 16, Issue: 23, Article Number: 7410
Impact Factor: 3.4 | Quartile: 2 | Citations: 7
DOI: 10.3390/ma16237410
- Influence of zinc substitution on the structural, dielectric, and gas sensing properties of Mg_{1-x}Zn_xFe₂O₄ nanoparticles** 2023
Iqra Nazir Farhan Javaid Mutawara Mahmood Baig Muhammad Shoaib Butt Iftikhar Hussain Gul
ACS Omega, Volume 8, Issue 38, Pages 34760-34767
Impact Factor: 4.1 | Quartile: 2 | Citations: 3
DOI: 10.1021/acsomega.3c03781
- Exploring Study of Magnetic and Electrical Properties of Ti₃+ Doped Co_{0.5}Ni_{0.5}Fe₂O₄ Spinel Ferrites** 2023
Touseef Ahmad M. U. Islam Iftikhar Hussain Gul M. Ajmal Mutawara Mahmood Baig
Journal of Materials and Physical Sciences, Volume 4, Number 1, Pages 20-31
Impact Factor: N/A
DOI: <https://doi.org/10.52131/jmps.2023.0401.0033>
- Gamma irradiated structural modification of Ti₃C₂T_x for high performance supercapacitors and the hydrogen evolution reaction** 2023
Muhammad Taqi Mehran Mutawara Mahmood Baig Faisal Shahzad Salman Raza Naqvi Sajid Iqbal
New Journal of Chemistry, Volume:47, Issue:15, Pages 7205-7210
Impact Factor: 2.7000 | Quartile: 2
DOI: <https://doi.org/10.1039/D2NJ06243G>
- Nanostructured Fe-substituted NiCo₂O₄@NiMnCo-LDH ternary composite as an electrode material for high-performance supercapacitors** 2023
Ayla Sajid Javearia Tariq Faiq Ahmad Mutawara Mahmood Baig Iftikhar Hussain Gul Uzma Habib
Journal of Materials Science, Volume 58, Issue 11, Pages 4882-4900
Impact Factor: 4.682 | Quartile: 2 | Citations: 12
DOI: <https://doi.org/10.1007/s10853-023-08336-3>
- Silica-Fiber-Reinforced Composites for Microelectronic Applications: Effects of Curing Routes** 2023
Imran Haider Iftikhar Hussain Gul Malik Adeel Umer Mutawara Mahmood Baig

Facile synthesis of a multifunctional ternary SnO₂/MWCNTs/PANI nanocomposite: Detailed analysis of dielectric, electrochemical, and water splitting applications

2023

Muhammad Zarrar Khan Iftikhar Hussain Gul Mutawara Mahmood Baig Muhammad Aftab Akram

Electrochimica Acta , Volume:441,

Impact Factor: 7.336 | Quartile: 1 | Citations: 30

DOI: 10.1016/j.electacta.2023.141816

A highly efficient A-site deficient perovskite interlaced within two dimensional MXene nanosheets as an active electrocatalyst for hydrogen production

2022

Ramsha Khan Muhammad Taqi Mehran Salman Raza Naqvi Asif Hussain Khoja Mutawara Mahmood Baig Muhammad Aftab Akram Faisal Shahzad Sajjad Hussain

International Journal of Hydrogen Energy , Volume 47, Issue 88, Pages 37476-37489

Impact Factor: 7.139 | Quartile: 2 | Citations: 30

DOI: <https://doi.org/10.1016/j.ijhydene.2021.09.017>

Three-dimensional hierarchical flowers-like cobalt-nickel sulfide constructed on graphitic carbon nitride: Bifunctional non-noble electrocatalyst for overall water splitting

2022

Rubab Zahra Erum Pervaiz Mutawara Mahmood Baig Osama Rabi

Electrochimica Acta , Volume 418, Article Number 140346

Impact Factor: 7.336 | Quartile: 1 | Citations: 41

DOI: <https://doi.org/10.1016/j.electacta.2022.140346>

Praseodymium-doped Sr₂TiFeO_{6-δ} double perovskite as a bi-functional electrocatalyst for hydrogen production through water splitting

2022

Qassam Sarmad Uneeb Masood Khan Mutawara Mahmood Baig Muhammad Hassan Faaz Ahmed Butt Asif Hussain Rabia Liaquat Zuhair Subhani Khan Mustafa Anwar Muhammed Ali S.A.

Journal of Environmental Chemical Engineering , Volume 10, Issue 3, Article Number 107609

Impact Factor: 5.909 | Quartile: 1 | Citations: 38

DOI: 10.1016/j.jece.2022.107609

HF free greener Cl-terminated MXene as novel electrocatalyst for overall water splitting in alkaline media

2022

Bilal Sarfraz Muhammad Taqi Mehran Mutawara Mahmood Baig Salman Raza Naqvi Asif Hussain Khoja Faisal Shahzad

International Journal of Energy Research , Pages 1-13

Impact Factor: 4.6 | Quartile: 1 | Citations: 45

DOI: <https://doi.org/10.1002/er.7895>

Synthesis of Magnetic Fe₃O₄ Nano Hollow Spheres for Industrial TNT Wastewater Treatment

2022

Sana Javaid Muhammad Shahid Shafi Ur Rehman Mutawara Mahmood Baig Badar Rashid Caroline R Szczepanski Sabrina J Curley

Nanomaterials , Volume 12, Issue 5, Article Number 881

Impact Factor: 5.3 | Quartile: 1 | Citations: 8

DOI: 10.3390/nano12050881

One-step sonochemical synthesis of NiMn-LDH for supercapacitors and overall water splitting

2021

Mutawara Mahmood Baig Iftikhar Hussain Gul Rabia Ahmad, Sherjeel Mahmood Baig, Muhammad Zarrar Khan Naseem Iqbal

Journal of Materials Science , Volume 56, Pages18636-18649

Impact Factor: 4.220 | Quartile: 2 | Citations: 58

DOI: <https://doi.org/10.1007/s10853-021-06431-x>

Direct chemical synthesis of interlaced NiMn-LDH nanosheets on LSTN perovskite decorated Ni foam for high-performance supercapacitors

2021

Mutawara Mahmood Baig Muhammad Taqi Mehran Ramsha Khan Khalid Mehmood Salman Raza Naqvi Asif Hussain Khoja Iftikhar Hussain Gul

Surface and Coatings Technology , Volume 421, Article Number 127455

Impact Factor: 4.865 | Quartile: 1

DOI: <https://doi.org/10.1016/j.surfcoat.2021.127455>

Reutilizing Methane Reforming Spent Catalysts as Efficient Overall Water-Splitting Electrocatalysts

2021

Muhammad Awais Khan Muhammad Taqi Mehran Salman Raza Naqvi Asif Hussain Khoja Faisal Shahzad Umair Sikander Sajjad Hussain Ramsha Khan

Bilal Sarfaraz Mutawara Mahmood Baig

ACS Omega , Volume 6(33), Pages 21316–21326

Impact Factor: 3.512 | Quartile: 2 | Citations: 21

DOI: <https://doi.org/10.1021/acsomega.1c01558>

Preparation of porous ZIF-67 network interconnected by MWCNTs and decorated with Ag nanoparticles for improved non-enzymatic electrochemical glucose sensing.

2021

Elizbit Usman Liaqat Zakir Hussain Mutawara Mahmood Baig Muzamil Ahmad Khan Dooa Arif
Journal of the Korean Ceramic Society, Pages 1-8

Impact Factor: 2.506 | **Quartile:** 3 | **Citations:** 33

DOI: <https://doi.org/10.1007/s43207-021-00132-6>

Hierarchical MnNiCo ternary metal oxide/graphene nanoplatelets composites as high rated electrode material for supercapacitors

2021

Sarah Malik Iftikhar Hussain Gul Mutawara Mahmood Baig
Ceramic International, Volume 47, Issue 12, Pages 17008-17014

Impact Factor: 5.532 | **Quartile:** 1 | **Citations:** 53

DOI: <https://doi.org/10.1016/j.ceramint.2021.02.272>

NiFe₂O₄/SiO₂ nanostructures as a potential electrode material for high rated supercapacitors

2021

Mutawara Mahmood Baig Erum Pervaiz Misbah azad Zaib Jahan Muhammad Bilal Khan Niazi Sherjeel Mahmood Baig
Ceramics International - Please attach published paper, Volume 47, Issue 9, Pages 12557-12566

Impact Factor: 5.532 | **Quartile:** 1 | **Citations:** 59

DOI: <https://doi.org/10.1016/j.ceramint.2021.01.113>

Transformation of wheat husk to 3D activated carbon/NiCo₂S₄ frameworks for high-rate asymmetrical supercapacitors

2021

Mutawara Mahmood Baig Iftikhar Hussain Gul
Journal of Energy Storage, Volume 37, Article Number 102477

Impact Factor: 8.907 | **Quartile:** 1 | **Citations:** 47

DOI: <https://doi.org/10.1016/j.est.2021.102477>

Binder-free pseudocapacitive nickel cobalt sulfide/MWCNTs hybrid electrode directly grown on nickel foam for high rate supercapacitors

2021

Muhammad Aftab Akram Muhammad Saleem Akhtar Iftikhar Hussain Gul Mutawara Mahmood Baig
Materials Science and Engineering: B, Volume 264, Article Number 114898

Impact Factor: 3.407 | **Quartile:** 2 | **Citations:** 47

DOI: <https://doi.org/10.1016/j.mseb.2020.114898>

Conversion of wheat husk to high surface area activated carbon for energy storage in high-performance supercapacitors

2021

Mutawara Mahmood Baig Iftikhar Hussain Gul
Biomass and Bioenergy, Volume 144, Article Number 105909

Impact Factor: 5.774 | **Quartile:** 1 | **Citations:** 104

DOI: <https://doi.org/10.1016/j.biombioe.2020.105909>

Comprehensive study on structural, electrical, magnetic and photocatalytic degradation properties of Al³⁺ ions substituted nickel ferrites nanoparticles

2020

Muhammad Zarrar Khan Iftikhar Hussain Gul Mutawara Mahmood Baig Ahmad Nawaz Khan
Journal of Alloys and Compounds, Volume 848, Article Number 155795

Impact Factor: 5.316 | **Quartile:** 1 | **Citations:** 62

DOI: <https://doi.org/10.1016/j.jallcom.2020.155795>

ZIF-67 derived nitrogen doped CNTs decorated with sulfur and Ni(OH)₂ as potential electrode material for high-performance supercapacitors

2020

Naseem Iqbal Tayyaba Noor Mutawara Mahmood Baig Ghulam Ali Iftikhar Hussain Gul Rabia Ahmad
Electrochimica Acta, Volume 364, Article Number 137147

Impact Factor: 6.901 | **Quartile:** 2 | **Citations:** 58

DOI: <https://doi.org/10.1016/j.electacta.2020.137147>

High-Performance Supercapacitor Electrode Obtained by Directly Bonding 2D Materials: Hierarchal MoS₂ on Reduced Graphene Oxide

2020

Mutawara Mahmood Baig Erum Pervaiz Minghui Yang Iftikhar Hussain Gul
Frontiers in Materials, Volume 7, Article Number 580424

Impact Factor: 3.515 | **Quartile:** 2 | **Citations:** 49

DOI: [10.3389/fmats.2020.580424](https://doi.org/10.3389/fmats.2020.580424)

3D hierarchical heterostructured LSTN@NiMn-layered double hydroxide as a bifunctional water splitting electrocatalyst for hydrogen production

2020

Ramsha Khan M. Taqi Mehran Mutawara Mahmood Baig Bilal Sarfraz Salman Raza Naqvi Muhammad Bilal Khan Niazi Muhammad Zubair Khan Asif Hussain Khoja

Fuel, Volume 285, Article Number 119174

Impact Factor: 6.609 | **Quartile:** 1 | **Citations:** 77

DOI: <https://doi.org/10.1016/j.fuel.2020.119174>

Catalytic Activity and Kinetic Studies of Core@Shell Nanostructure Nife2o4@Tio2 for Photocatalytic Degradation of Methyl Orange Dye

2020

Mutawara Mahmood Baig Erum Pervaiz Muhammad Junaid Afzal

Journal of the Chemical Society of Pakistan, Volume: 42, No:06, Pages:531-541

Impact Factor: 0.536 | **Quartile:** 4

DOI: 10.52568/000669/JCSP/42.04.2020

MWCNTs/NiS₂ Decorated Ni Foam Based Electrode for High-Performance Supercapacitors

2020

Misbah Azad Zakir Hussain Mutawara Mahmood Baig

Electrochimica Acta, Volume 345, Article Number 136196

Impact Factor: 6.901 | **Quartile:** 2 | **Citations:** 71

DOI: <https://doi.org/10.1016/j.electacta.2020.136196>

Binder-free heterostructured MWCNTs/Al₂S₃ decorated on NiCo foam as highly reversible cathode material for high-performance supercapacitors

2020

Iftikhar Hussain Gul Muhammad Zarrar Khan Mutawara Mahmood Baig Muhammad Taqi Mehran Muhammad Saleem Akhtar

Electrochimica Acta, Volume 340, Article Number 135955

Impact Factor: 6.901 | **Quartile:** 2 | **Citations:** 46

DOI: <https://doi.org/10.1016/j.electacta.2020.135955>