

Sehar Shakir

Assistant Professor

US-Pakistan Center for Advanced Studies in Energy

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About

Dr. Sehar Shakir is working as Assistant Professor in the US-Pakistan Center for Advanced Studies in Energy. Dr. Sehar Shakir has a PhD in Dye Sensitized Solar Cells. Dr. Sehar Shakir has published 45 research articles & conference papers having a citation count of 804, carried out 6 projects and filed 0 intellectual property.

Qualifications

PhD in Dye Sensitized Solar Cells	2015 - 2018
Universiti Malaya , Malaysia	
MS in Energy systems Engineering	2012 - 2014
NUST, Islamabad , Pakistan	
BS in Mechanical Engineering	2008 - 2012
UET Lahore , Pakistan	

Experience

Assistant Professor	2025- Present
US-Pakistan Center for Advanced Studies in Energy	
Assistant Professor	2024 - 2023
US-Pakistan Center for Advanced Studies in Energy	
Assistant Professor	2024 - 2024
US-Pakistan Center for Advanced Studies in Energy	
Assistant Professor	2023 - 2024
US-Pakistan Center for Advanced Studies in Energy	
Assistant Professor	2023 - 2024
US-Pakistan Center for Advanced Studies in Energy	
Assistant Professor	2020 - 2023
US-Pakistan Center for Advanced Studies in Energy	
Assistant Professor	2019 - 2018
US-Pakistan Center for Advanced Studies in Energy	
Assistant Professor	2018 - 2020
Centre for Energy System	

Awards

FDP scholarship	2015
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Research Projects

National Projects

Developing Climate Resilience Environment through Energy Transition and Knowledge Development	2024
Funding Agency: TARA Climate Foundation	
Amount: PKR 22,401,960.00	
Status: Approved_inprocess	
Creating Climate Resilience through Energy Transition: Fostering Innovation and Awareness in Pakistan	2023
Funding Agency: Tara Climate Ltd	
Amount: PKR 18,900,120.00	
Status: Approved_inprocess	
Zirconia coating on Ti-alloy and ceramic substrates for enhanced thermal protection	2023
Funding Agency: NESCOM	
Amount: PKR 300,000.00	
Status: Completed	
To combat climate calamity by promoting energy transition In Pakistan through Knowledge creation, networking, and advocacy for enabling society.	2022
Funding Agency: Tara Climate Ltd	
Amount: PKR 11,312,840.00	
Status: Completed	
Solar Driven Building Integrated Heating, Cooling and Electricity Generation System	2022
Funding Agency: HEC	
Amount: PKR 8,590,000.00	
Status: Completed	
A Solar Driven Decentralized Small Scale Water Purification System for Remote Communities.	2021
Funding Agency: None	
Amount: PKR 290,570.00	
Status: Completed	

International Projects

Research Articles

Enhancing Cr(VI) remediation efficiency using hemp-derived biochar: insights into RSM optimization and adsorption kinetics using ANN modelling	2025
Mussarat Ul Ain Abdul Rehman Asif Hussain Rabia Naeem Abdul Ahad Khan Jawad Gul Hajirah Kanwal Ajmal Hamid Israf Ud Din Sehar Shakir	
International Journal of Environmental Science and Technology, Pages 1-22	
Impact Factor: 3.400 Quartile: 2	
DOI: https://doi.org/10.1007/s13762-025-06612-0	
Photocatalytic performance of dual-function selenium-enriched biomass-derived activated carbon as a catalyst for dye degradation and hydrogen production	2025
Hajirah Kanwal Asif Hussain Yassine Hajji Sehar Shakir Mustafa Anwar Rabia Liaquat Israf Ud Din Ali Bahadur Manel Hleili	
International Journal of Hydrogen Energy, Volume 101, Pages 1288-1303	
Impact Factor: 8.100 Quartile: 1 Citations: 1	
DOI: https://doi.org/10.1016/j.ijhydene.2024.12.509	
Solution-Processed Zinc-Tin-Based Ternary Oxide Electron Transport Layers for Planar Perovskite Solar Cells	2024
Saad Nadeem Nadia Shahzad Sana Mehmood Muhammad Salik Qureshi Abdul Sattar Rabia Liaquat Sehar Shakir Muhammad Imran Shahzad Diego Pugliese	
Physica Status Solidi A - Applications and Materials Science, Volume: 222, Issue: 4 Article Number; 2400700, Pages:07	
Impact Factor: 1.900 Quartile: 3	
DOI: https://doi.org/10.1002/pssa.202400700	
Synthesis and Performance Analysis of a Carbon-Doped Titania (C–TiO2) Counter Electrode (CE) for Dye-Sensitized Solar Cells (DSSCs)	2024
Faisal Abbas Muhammad Tahir Asif Hussain Nadia Shahzad Mustafa Anwar Muniba ayub Sehar Shakir	
Journal of Electronic Materials , Volume 53, Issue 8, Pages 4773-4781	
Impact Factor: 2.200 Quartile: 3 Citations: 3	

DOI: <https://doi.org/10.1007/s11664-024-11222-6>

- Performance evaluation of ruthenium complexes and organic sensitizers in ZnO-based dye-sensitized solar cells** 2024
Muniba Ayub Nadia Shahzad Ahad Hussain Javed Sana Mehmood Saad Nadeem Zuhair S Khan Sehar Shakir Faroha Liaquat Faisal Abbas Muhammad Imrai Shahzad Diego Pugliese
Engineering Research Express, Volume 6, Issue 2, Article Number 025016
Impact Factor: 1.500 | **Quartile:** 2 | **Citations:** 1
DOI: 10.1088/2631-8695/ad5787
- Praseodymium doped nickel oxide as hole-transport layer for efficient planar Perovskite Solar Cells** 2024
Muhammad Tahir Hafiz Muhammad Abd ur Rehman Asif Hussain Mustafa Anwar Muhammad Adil Mansoor Faisal Abbas Sehar Shakir
Optik, Volume:300, Article Number: 171630
Impact Factor: 3.1 | **Quartile:** 2 | **Citations:** 7
DOI: 10.1016/j.ijleo.2024.171630
- Energy, economic and environmental (3E) analyses of solar photovoltaic and fuel cell based hybrid energy system for a developing country: a worldwide approach to sustainable energy** 2024
Maham Fazal Abdul Kashif Janjua Mustafa Anwar Muhammad Hassan Sehar Shakir Ali Bahadar
Environment, Development and Sustainability, Pages 1-28
Impact Factor: 4.9 | **Quartile:** 2 | **Citations:** 4
DOI: <https://doi.org/10.1007/s10668-024-04677-4>
- The photoelectrochemically enhanced oxygen evolution reaction via thin films of novel (1:2:1) SnO-Mn₂O₃-TiO₂ hybrid nanotubes** 2024
Rabia Naeem Sehar Shakir Shahzad Sharif Saba Afzal Shahid Bashir Muhammad Adil Mansoor
Surfaces and Interfaces, Volume 46, Article Number: 104034
Impact Factor: 6.2 | **Quartile:** 1 | **Citations:** 11
DOI: 10.1016/j.surfin.2024.104034
- Optical and photoelectrocatalytic performance of Tin (II) oxide silicate (Sn₆SiO₈) thin films as a photoanode by Aerosol Assisted Chemical Vapor Deposition** 2024
Rabia Naeem Khadija Munawar Sehar Shakir Rabia Sattar Muhammad Adil Mansoor
Optical Materials, Volume 148, Article Number: 114960
Impact Factor: 3.9 | **Quartile:** 2 | **Citations:** 5
DOI: 10.1016/j.optmat.2024.114960
- Effect of surfactants on the stability and thermophysical properties of Al₂O₃+TiO₂ hybrid nanofluids** 2023
Abdul Rehman Sana Yaqub Majid Ali Hassan Nazir Nadia Shahzad Sehar Shakir Rabia Liaquat Zafar Said
Journal of Molecular Liquids, Volume 391, Part B, Article Number 123350
Impact Factor: 6.0 | **Quartile:** 1 | **Citations:** 31
DOI: <https://doi.org/10.1016/j.molliq.2023.123350>
- Techno-economic assessment of wind farm for sustainable power generation in Northern coastal region of Arabian sea** 2023
Muhammad Zaid Masood Khan Hafiz Muhammad Abdur Rehman Abdul Kashif Janjua Adeel Waqas Sehar Shakir Majid Ali
Energy Reports, Volume 9, Pages 1278-1290
Impact Factor: 4.937 | **Quartile:** 2 | **Citations:** 5
DOI: <https://doi.org/10.1016/j.egyr.2022.12.057>
- Performance evaluation of direct Z-scheme based modified titania composite for photocatalytic degradation of organic pollutants** 2023
Tayab Hussain Talha Shabbir Mustafa Anwar Ali Bahadur Sehar Shakir
Optical Materials, Volume 145, Article Number 114442
Impact Factor: 3.9 | **Quartile:** 2 | **Citations:** 1
DOI: <https://doi.org/10.1016/j.optmat.2023.114442>
- A building integrated solar PV surface-cleaning setup to optimize the electricity output of PV modules in a polluted atmosphere** 2023
Shayan Umar Adeel Waqas Waqas Tanveer Nadia Shahzad Abdul Kashif Janjua Maziar Dehgan Muhammad Salik Qureshi Sehar Shakir
Renewable Energy, Volume 216, Article Number 119122
Impact Factor: 8.7 | **Quartile:** 1 | **Citations:** 19
DOI: <https://doi.org/10.1016/j.renene.2023.119122>
- Enhancement in the photocatalytic and optoelectronic properties of erbium oxide by adding zinc oxide and molybdenum** 2023

<p><i>Muhammad Talha Shabbir Tayyab Hussain Sehar Shakir Mustafa Anwar Asif Hussain Khoja Syed Nawaz Aamir Naseem Satti</i> <i>Ceramics International</i> , Volume 49, Issue 12, Pages 19691-19700</p> <p>Impact Factor: 5.2 Quartile: 1 Citations: 9 DOI: https://doi.org/10.1016/j.ceramint.2023.03.086</p>		
<p>Techno-economic appraisal of electric vehicle charging stations integrated with on-grid photovoltaics on existing fuel stations: A multicity study framework</p> <p><i>Talha Hussain Shah Altamash Shabbir Adeel Waqas Abdul Kashif Janjua Nadia Shahzad Hina Pervaiz Sehar Shakir</i> <i>Renewable Energy</i> , Volume 209, Pages 133-144</p> <p>Impact Factor: 8.634 Quartile: 1 Citations: 40 DOI: https://doi.org/10.1016/j.renene.2023.03.128</p>		2023
<p>Performance assessment of Trombe wall and south façade as applications of building integrated photovoltaic systems</p> <p><i>Muhammad Siddique Nadia Shahzad Shayan Umar Adeel Waqas Sehar Shakir Abdul Kashif Janjua</i> <i>Sustainable Energy Technologies and Assessments</i>, Volume 57, Article Number 103141</p> <p>Impact Factor: 7.632 Quartile: 2 Citations: 19 DOI: https://doi.org/10.1016/j.seta.2023.103141</p>		2023
<p>A techno-economic and socio-environmental planning of wind farms for sustainable development and transition to a decarbonized scenario: Pakistan as a case study</p> <p><i>Saeeda Khanum Mohammad Uzair Shah Adeel Waqas Ahmad Abdul Kashif Janjua Sehar Shakir</i> <i>Sustainable Energy Technologies and Assessments</i>, Volume 55, Article Number 102969</p> <p>Impact Factor: 7.1 Quartile: 1 Citations: 8 DOI: https://doi.org/10.1016/j.seta.2022.102969</p>		2023
<p>Thermal steam methane reforming over bimetal-loaded hemp-derived activated carbon-based catalyst for hydrogen production</p> <p><i>Rashid Minhas Asif Hussain Khoja Nida Naeem Mustafa Anwar Sehar Shakir Rabia Liaquat Israf Ud Din</i> <i>Research on Chemical Intermediates</i>, Pages 1-23</p> <p>Impact Factor: 3.134 Quartile: 3 Citations: 12 DOI: https://doi.org/10.1007/s11164-022-04924-1</p>		2022
<p>Challenges and issues with the performance of boron nitride rooted membrane for gas separation</p> <p><i>Zarrar Salauddin Marghoob Ahmed Sarah Farrukh Sher Ahmad Abulhassan Ali Sofia Javed Arshad Hussain Mohammad Younas Sehar Shakir Awais Bokhari</i> <i>Abdulkader S. Hanbazazah</i> <i>Chemosphere</i> , Volume 308, Part 1, Article Number 136002</p> <p>Impact Factor: 8.8 Quartile: 1 Citations: 11 DOI: https://doi.org/10.1016/j.chemosphere.2022.136002</p>		2022
<p>Model analysis on effect of temperature on the solubility of recycling of Polyethylene Terephthalate (PET) plastic</p> <p><i>Syed Shujaat Karim Sarah Farrukh Takeshi Matsuura Muhammad Ahsan Arshad Hussain Sehar Shakir Lai Fatt Chuah Mudassir Hasan Awais Bokhari</i> <i>Chemosphere</i> , Volume 307, Part 3, Article Number 136050</p> <p>Impact Factor: 8.943 Quartile: 1 Citations: 31 DOI: https://doi.org/10.1016/j.chemosphere.2022.136050</p>		2022
<p>Partial Oxidation of Methane over CaO Decorated TiO₂ Nanocatalyst for Syngas Production in a Fixed Bed Reactor</p> <p><i>Asif Hussain Khoja Ahad Hussain Javed Salman Raza Naqvi Sehar Shakir Irfan ud Din Zafar Arshad Umer Rashid Umair Yaqub Qazi Nida Naeem</i> <i>Catalysts</i> , Volume 12, Issue 10, Article Number 1089</p> <p>Impact Factor: 4.501 Quartile: 2 Citations: 10 DOI: https://doi.org/10.3390/catal12101089</p>		2022
<p>Technical and Economic Evaluation of a 50 MW Solar Power Plant in Quetta †</p> <p><i>Gohram Khan Dr. Muhammad Hassan Dr. Mustafa Anwar Dr. Adeel Waqas Dr. Sehar Shakir Jamsheed Sajid</i> <i>Engineering Proceedings</i> , Volume:20, Issue:1, Article Number: 46</p> <p>Impact Factor: N/A Citations: 2 DOI: 10.3390/engproc2022020046</p>		2022
<p>Thermal and electrical performance of solar floating PV system compared to on-ground PV system-an experimental investigation</p> <p><i>Hamza Nisar Abdul Kashif Janjua Hamza Hafeez Sehar Shakir Nadia Shahzad Adeel Waqas Ahmad</i> <i>Solar Energy</i> , Volume 241, Pages 231-247</p> <p>Impact Factor: 6.7 Quartile: 2 Citations: 72</p>		2022

DOI: <https://doi.org/10.1016/j.solener.2022.05.062>

Prospects towards sustainability: A comparative study to evaluate the environmental performance of brick making kilns in Pakistan 2022

Affan Rauf Sehar Shakir Amos Ncube Hafiz Muhammad Abdur Rehman Abdul Kashif Janjua Saeeda Khanum Asif Hussain
Environmental Impact Assessment Review, Volume 94, Article Number 106746

Impact Factor: 7.9 | **Quartile:** 1 | **Citations:** 18

DOI: <https://doi.org/10.1016/j.eiar.2022.106746>

Performance Analysis of Calcium-Doped Titania (TiO₂) as an Effective Electron Transport Layer (ETL) for Perovskite Solar Cells 2022

Zafar Arshad Sehar Shakir Asif Hussain Khoja Ahad Hussain Javed Mustafa Anwar Abdur Rehman Rahat Javaid Umair Yaqoob Qazi Sarah Farrukh
Energies, Volume 15(4), Article Number 1408

Impact Factor: 3.004 | **Quartile:** 3 | **Citations:** 20

DOI: <https://doi.org/10.3390/en15041408>

Techno-economic perspective of a floating solar PV deployment over urban lakes: A case study of NUST lake Islamabad 2022

Hamza Hafeez Abdul Kashif Janjua Hamza Nisar Sehar Shakir Nadia Shahzad Adeel Waqas
Solar Energy, Volume 231, Pages 355-364

Impact Factor: 6.7 | **Quartile:** 2 | **Citations:** 41

DOI: <https://doi.org/10.1016/j.solener.2021.11.071>

Fabrication of Metal (Cu and Cr) Incorporated Nickel Oxide Films for Electrochemical Oxidation of Methanol 2021

Rimsha Liaquat Muhammad Adil Mansoor Javed Iqbal Asim Jilani Sehar Shakir Abul Kalam S. Wageh
Crystals, Volume 11(11), Article Number 1398

Impact Factor: 2.589 | **Quartile:** 2 | **Citations:** 29

DOI: <https://doi.org/10.3390/cryst11111398>

Synthesis of cobalt loaded double perovskite Sr₂TiFeO_{6-δ} (STF) as a stable catalyst for enhanced hydrogen production via methane decomposition 2021

Uneeb Masood Khan Qassam Sarmad Mustafa Anwar Asif Hussain Khoja Muhammed Ali S.A. Zuhair S. Khan Muhammad Hassan Sehar Shakir
International Journal of Energy Research, Volume 45, Issue 14, Pages 20073-20088

Impact Factor: 4.672 | **Quartile:** 1 | **Citations:** 9

DOI: <http://dx.doi.org/10.1002/er.7084>

Methane decomposition for hydrogen production over biomass fly ash-based CeO₂ nanowires promoted cobalt catalyst 2021

Jehangeer Raza Asif Hussain Khoja Salman Raza Naqvi Muhammad Taqi Mehran Sehar Shakir Rabia Liaquat Muhammad Tahir Ghulam Ali
Journal of Environmental Chemical Engineering, Volume 9, Issue 5, Article Number 105816

Impact Factor: 7.968 | **Quartile:** 1 | **Citations:** 39

DOI: <https://doi.org/10.1016/j.jece.2021.105816>

Optimization of a wind farm by coupled actuator disk and mesoscale models to mitigate neighboring wind farm wake interference from repowering perspective 2021

Mehtab Ahmed Khan Adeel Javed Sehar Shakir Abdul Haseeb Syed
Applied Energy, Volume 298, Article Number 117229

Impact Factor: 11.446 | **Quartile:** 1 | **Citations:** 24

DOI: <https://doi.org/10.1016/j.apenergy.2021.117229>

Magnesium doped TiO₂ as efficient electron transport layer in perovskite solar cells 2021

Zafar Arshad Asif Hussain Khoja Sehar Shakir Asif Afzal M A Mujtaba Manzoor Elahi M Soudagar H Fayyaz Ahamed Saleel Sara Farukh Mudassar Saeed
Case Studies in Thermal Engineering, Volume 26, Article Number 101101

Impact Factor: 6.268 | **Quartile:** 1 | **Citations:** 49

DOI: <https://doi.org/10.1016/j.csite.2021.101101>

Performance Analysis of TiO₂-Modified Co/MgAl₂O₄ Catalyst for Dry Reforming of Methane in a Fixed Bed Reactor for Syngas (H₂, CO) Production 2021

Arslan Mazhar Asif Hussain Khoja Abul Kalam Azad Faisal Mushtaq Salman Raza Naqvi Sehar Shakir Muhammad Hassan Rabia Liaquat Mustafa Anwar
Energies, Volume 14(11), Article Number 3347

Impact Factor: 3.004 | **Quartile:** 3 | **Citations:** 24

DOI: <https://doi.org/10.3390/en14113347>

Techno-economic assessment of concentrated solar thermal power generation and potential barriers in its deployment in Pakistan 2021

Saad Tahir Muhammad Ahmad Hafiz Muhammad Abdur Rehman Saad Tahir Muhammad Ahmad Sehar Shakir
Journal of Cleaner production, Volume 293, Article Number 126125

Impact Factor: 11.072 | **Quartile:** 1 | **Citations:** 58

DOI: <https://doi.org/10.1016/j.jclepro.2021.126125>

Multistep electrophoretic deposition of TiO₂ film and its surface modification for dye sensitized solar cells

2020

Sehar Shakir Hafiz Muhammad Abd-ur-Rehman Rehan Zahid Mitsumasa Iwamoto Vengadesh Periasamy
Journal of Alloys and Compounds, Volume 837, Article Number 155579

Impact Factor: 5.316 | **Quartile:** 1 | **Citations:** 16

DOI: [10.1016/j.jallcom.2020.155579](https://doi.org/10.1016/j.jallcom.2020.155579)

Thermal dry reforming of methane over La₂O₃ co-supported Ni/MgAl₂O₄ catalyst for hydrogen-rich syngas production

2020

Asif Hussain Khoja Mustafa Anwar Sehar Shakir Muhammad Taqi Mehran Arslan Mazhar Adeel Javed Nor Aishah Saidina Amin
Research on Chemical Intermediates, Volume 46, Pages 3817-3833

Impact Factor: 2.914 | **Quartile:** 3 | **Citations:** 29

DOI: <https://doi.org/10.1007/s11164-020-04174-z>

The potential of energy savings and the prospects of cleaner energy production by solar energy integration in the residential buildings of Saudi Arabia

2018

Hafiz M. Abd-ur-Rehman Sehar Shakir Fahad A. Al-Sulaiman Aamir Mehmood Muhammad Umer
Journal of Cleaner Production, Volume 183, Pages 1113-1122

Impact Factor: 6.395 | **Quartile:** 1

DOI: <https://www.sciencedirect.com/journal/journal-of-cleaner-production>

Fabrication of un-doped and magnesium doped TiO₂ films by aerosol assisted chemical vapor deposition for dye sensitized solar cells

2018

Sehar Shakir Hafiz M. Abd-ur-Rehman Kamran Yunus Mitsumasa Iwamoto Vengadesh Periasamy
Journal of Alloys and Compounds, -

Impact Factor: 4.175 | **Quartile:** 1 | **Citations:** 51

DOI: [10.1016/j.jallcom.2017.12.165](https://doi.org/10.1016/j.jallcom.2017.12.165)

Electro-catalytic and structural studies of DNA templated gold wires on platinum/ITO as modified counter electrode in dye sensitized solar cells

2018

Sehar Shakir Yiing Yee Foo Nastaran Rizan Hafiz M. Abd?ur?Rehman Kamran Yunus Phang Siew Moi Vengadesh Periasamy
Journal of Materials Science: Materials in Electronics, Volume 29, Issue 6, Pages 4602-4611

Impact Factor: 2.324 | **Quartile:** 2 | **Citations:** 8

DOI: [10.1007/s10854-017-8411-3](https://doi.org/10.1007/s10854-017-8411-3)

Fabrication of capillary force induced DNA template Ag nanopatterns for sensitive and selective enzyme-free glucose sensors

2018

Sehar Shakir J. Saravanan Nastaran Rizan K. Jusice Babu Md. Abdul Aziz Phang Siew Moi Vengadesh Periasamy G. Gnana kumar
Sensors and Actuators B-Chemical, -

Impact Factor: 6.393 | **Quartile:** 1 | **Citations:** 32

DOI: [10.1016/j.snb.2017.10.021](https://doi.org/10.1016/j.snb.2017.10.021)

Development of copper doped titania based photoanode and its performance for dye sensitized solar cell applications

2015

Sehar Shakir Zuhair S. Khan Asghar Ali Naveed Akbar Warda Musthaq
Journal of Alloys and Compounds, Volume: 652, Pages: 331-340

Impact Factor: 3.014 | **Quartile:** 1 | **Citations:** 22

DOI: [10.1016/j.jallcom.2015.08.243](https://doi.org/10.1016/j.jallcom.2015.08.243)

Electrochemical and Structural Properties of Organic Carbon Based Counter Electrode (CE) for DSSCs

2023

Kazim Murtaza Faisal Abbas Sehar Shakir

11th IEEE International Conference on Smart Energy Grid Engineering (SEGE), res.country(38,)

Citations: N/A

DOI: 10.1109/SEGE59172.2023

Optimization of industrial hybrid renewable energy system using HOMER

2023

Muhammad Haseeb Khalid Sehar Shakir Adeel Waqas Rabia Liaquat Abdul Kashif Janjua

2023 International Conference on Emerging Power Technologies, ICEPT 2023, res.country(177,)

Citations: N/A

DOI: 10.1109/ICEPT58859.2023.10152347

Performance analysis of combined humidification dehumidification (HDH) system coupled with air conditioning system

2021

Muhammad Zeeshan Islam Adeel Waqas Hafiz Abd-ur-Rehman Majid Ali Sehar Shakir Mariam Mahmood

International Conference on Energy, Water and Environment, res.country(177,)

Citations: N/A

DOI: NA