

Dr. Mohammad Rehan

Associate Professor

Head of Solid Waste Management Unit

Associate Editor for Frontiers in Energy Research (IF 2.746)

Associate Editor for Current World Environment (ISI, NASS Score – 4.98)

Guest Editor for Renewable & Sustainable Energy Reviews
(Elsevier – Impact Factor 12.11)



Center of Excellence in Environmental Studies (CEES)

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Biography

Dr. Mohammad Rehan graduated with BEng (Hons) in Chemical Engineering from the University of Bradford, UK in 2003. He then served for a year at the UK Environment Agency. He completed his PhD at School of Process, Environmental and Materials Engineering, sponsored by EPSRC, University of Leeds, UK in 2012. Dr. Rehan then worked as a Postdoctoral Research Associate for 2 years on several projects at University of Leeds, UK in collaboration with multinational industry including Procter & Gamble. He has extensive research, teaching and project management experience of more than 13 years. He has co-supervised several PhD and MSc students at Leeds University and King Abdulaziz University.

Dr. Rehan is currently working as an Associate Professor and Head of Solid Waste Management Unit at the Center of Excellence in Environmental Studies (CEES), King Abdulaziz University, Jeddah, Saudi Arabia since 2014. He has played a leading role in establishing Energy and Fuels, and Solid Waste Management Laboratories and research team at CEES. He has published more than 110 papers, including 1 book and 7 book chapters on the topics of energy and fuels, biofuels, nanomaterials, catalysts, renewable and sustainable energy, environmental pollution, waste to energy technologies and waste biorefineries. He has more than 2880 citations, total impact factor > 310, h-index of 29 and i10-index of 52. Six of his papers have been listed as Highly Cited Paper on web of science. Dr Rehan has given several oral presentations in international conferences and workshops including invited talks. He is currently involved in several funded projects as PI/ Co-PI, focusing on energy and fuels, environmental research, and advanced materials including nano-catalysts. He is serving as an Associate Editor in Frontiers in Energy Research Journal, Biofuels Research Journal, Current World Environment Journal and as Guest Editor in many journals. He is also serving as a Reviewer for many high impact Journals of Elsevier, ACS, RSC, SAGE and Frontiers and received the Publons Top Reviewer Awards for Engineering and Multidisciplinary Sciences for two consecutive years (2018 and 2019). Dr Rehan is currently editing five special issues as a Guest Editor including one in RSER (ISI, IF 10.556). Dr Rehan is also working as a Certified Publons Academy Mentor to train young researchers in peer reviewing process. Dr Rehan's research group has established collaboration with more than 60 International Institutions and published joint articles.

Dr Rehan research group's (Solid Waste Management at CEES) pioneering research and achievements was selected as a role model by the **Times Higher Education World University Rankings** and presented on their website for the ranking of King Abdulaziz University as No 1 in the Arab World in 2019. Below is how the **Times Higher Education World University Rankings** acknowledged the outstanding performance of Solid Waste Research Group at CEES.

“KAU's solid waste research group at the CEES is therefore trying to solve two problems at once by

pioneering ways of turning waste into energy. The work harnesses the power of naturally abundant zeolites (minerals formed in volcanic rock and ash layers, and traditionally used in cement and building stones) in waste-to-energy technology applications, making them cost and energy effective. The group is also investigating the use of grass as a raw material for producing biofuels.”

<https://www.timeshighereducation.com/hub/king-abdulaziz-university/p/environment>

Education

- **PhD (Process, Environmental and Materials Engineering)** (2007 - 2012)
Thesis Title: In Situ Hydrothermal Synthesis and Process Characterization of Titanium Dioxide Nanoparticles
University of Leeds, UK
- **BEng (Hons) in Chemical Engineering (2.1)** (2000 - 2003)
University of Bradford, UK

Employment

- **Associate Professor** (since July 2020)
- **Assistant Professor** (2014 - 2020)
Head of Solid Waste Management Unit (Since Dec 2019)
Center of Excellence in Environmental Studies (CEES), King Abdulaziz University, Jeddah, Saudi Arabia

Leading the Solid Waste Management Unit including Assistant Professors, Postgraduate students and technicians. Working on multiple funded projects as PI and Co-PI and collaboration projects with many International Universities focused on research areas Energy and Fuels, Waste based Biorefinery, Environmental Sciences, Nanomaterials including catalysts. The research involved developing waste-based bioenergy and value-added products through various systems including anaerobic digestion (biogas), pyrolysis (fuel-oil), transesterification (biodiesel) and algae biofuel (biodiesel). Further, exploration and development of natural resources such as natural zeolite and other nano-catalysts. Pioneer in initiating and working on renewable energy waste to energy and waste biorefinery research areas in Saudi Arabia. Leading role in establishing and managing solid waste group laboratories. Co-supervised two PhD students on pyrolysis of plastic waste to fuel and value-added products and health and safety areas and two MSc students. Also actively involved in teaching, administration and community work activities.

- **Postdoctoral Research Associate** (2012 - 2014)
School of Process, Environmental and Materials Engineering, University of Leeds, UK

Worked on multiple projects funded by European Regional Development Fund, DGP Intelsius and Procter & Gamble. Projects focused on; 1) designing and development of semi-batch and continuous crystallization processes for ZnCO₃ nanoparticles, 2) synthesis of ZnCO₃ nanoparticles through novel microemulsion process, 3) development of nanoparticles-enhanced phase change materials (NEPCMs) for energy storage applications, 4) synthesis and characterization of metal oxide nanoparticles. Worked extensively on many state-of-the-art characterization techniques including XRD, SEM, TEM, DSC, TGA and Nanosizer. Responsible for managing consumables, chemicals and health and safety aspects of research group laboratories. Involved in teaching, lab demonstration, tutorials and supervision of four MSc and two PhD students on their research projects.

- **Postgraduate Researcher** (2007 - 2012)
School of Process, Environmental and Materials Engineering University of Leeds, UK (PhD)

Project).

The project focused on *in situ* study of hydrothermal synthesis of titanium dioxide nanoparticles using synchrotron radiation ED-XRD. This revealed direct time-resolved information on particle formation, polymorphism, phase transformation, hydrothermal crystallization kinetics and mechanisms for process optimization. Characterization of synthesized nanoparticles by various techniques including XRD, SEM, TEM, DSC, TGA, AAS, Zetasizer, ICP-MS. Involved in teaching and supervision of research students at undergraduate and postgraduate levels.

- **Analyst/ Developer** (2006 - 2007)
UK Environment Agency, Leeds, UK

Worked on River Restoration Projects across the Yorkshire area, UK, utilizing aerial photography and GIS package to identify river restoration opportunities. The work involved extensive use of GIS Package with numerous existing data sets, such as conservation designations, estates information and survey data. Also involved in other projects such as flood risk management and data analysis of pollution emissions for the chemical industry across UK.

Teaching Experience

- **King Abdulaziz University, Saudi Arabia** 2015 - Present
 - Postgraduate research courses (ENS 799), Center of Excellence in Environmental Studies.
 - Training courses of solid waste management, sustainability, and hazardous waste management, Department of Environmental Sciences.
 - Participated in teaching environmental sciences courses, Department of Environmental Sciences.
 - Co-supervised 3 Ph.D. and 2 Master students on renewable and sustainable energy systems and resource recovery.
 - Taught and trained a group of nationwide Saudi talented students (Mawhiba) for 3 weeks for 3 years during summer camp. Our student group won the gold medal prize (first and second) for their excellent role in research and presentation activities for 2 consecutive years.
- **University of Leeds, UK** 2007 - 2014
 - **Teaching:** Taught Undergraduate Chemical Engineering Lab Module for three years. Responsibility included shared teaching, monitoring experimental work, reports marking (2008-2010).
 - **Lab Demonstrator:** Demonstrator for XRD experiments for MSc Pharmaceutical Science & Engineering. Provided training on different experimental procedures and techniques including XRD, SEM, DSC, TGA to many undergraduate and postgraduate students.
 - **Project co-supervision:** Co-supervised two PhD students with day-to-day activities on their research projects. Assisted many other students in planning and conducting their experiments, writing up reports at both undergraduate and postgraduate levels.
 - **Short Courses:** Delivered the laboratories demonstration part of Powder Characterisation short course at University of Leeds, UK (May 2013). Attended Effective Learning and Teaching course (Oct 2007). Being involved in marking exam papers, lab reports & research dissertations.

Editorship

- **Associate Editor**, Frontiers in Energy Research (IF 2.746), June 2017-present.
- **Guest Editor**, Renewable and Sustainable Energy Reviews (ISI, IF 12.11), Special Issue on 'New developments in sustainable waste-to-energy systems', Dec 2019 - July 2020.
- **Guest Editor**, Chemosphere, (ISI, IF 5.778), Special Issues on 'Recent Advancement in Anaerobic Digestion' 2020.
- **Guest Editor**, Renewable and Sustainable Energy Reviews (ISI, IF 12.11), Special Issue on 'Innovative Recovery Processes and Practices of Sustainable Energy from Biowaste and Biomass', Oct 2019 - July 2020.

- **Editorial**, Special issue on ‘Generating energy and economic revenue through integrated waste and resource management’ in Applied Energy (ISI, IF 8.848), 2019.
- **Associate Editor**, Current World Environment, (ISI, NASS Score – 4.98), October 2017 – present.
- **Guest Editor**, Special Issue on ‘Sustainable Waste-to-Energy Systems’ in Energies, MDPI, (ISI, IF 2.702).
- **Senior Editor** in International Journal of Agricultural and Environmental Research (Mar 2016 - Present)
- **Lead Guest Editor**, Special issue/topic on ‘Nanocatalysts in Biofuel Process Optimization’ in Frontiers in Energy Research (IF 2.746), Sep 2019 – present.
- **Lead Guest Editor**, Biofuel Research Journal (ISI, CiteScore 7.4), Special Issue, Dec 2019 - July 2020.
- **Guest Editor**, Special issue/topic on ‘Waste biorefineries: future energy, green products and waste treatment’ in Frontiers in Energy Research (IF 2.746), Sep 2017 - 2019. (Awarded Highly Cited Research Topic).
- **Guest Editor**, Current Organic Chemistry (Bentham Science, IF 1.933) for special issue ‘Waste Biomass Utilization for Value-added Green Products’, October 2017 - 2019.

Current Funded and Approved Research Projects (PI & Co-PI)

King Abdulaziz University, Saudi Arabia

(2014 - Present)

1. **Developing Advanced Integrated Waste Management Policies to Prevent the Spread of Epidemics such as Corona COVID-19 (PI)**
Project ID: GCV19-16-1441), Project approved by DSR (KAU). Budget: 69,000 SAR.
2. **Development of Waste Biorefinery in Saudi Arabia: A Way Forward to a Bio-based Economy (Co-PI)**
Project ID: 14-ENV2592-03. Project approved by NSTIP-KACST, Saudi Arabia. Requested Budget: 1,942,050 SAR.
3. **Environmental Remediation Strategies and Pollution Control (Co-I)**
Project ID: 67724/5/4. Project funded by Deanship of Scientific Research, King Khalid University. Approved Budget: 60,000 SAR.
4. **Development of Waste Plastic to Fuel Oil System using Innovative Reforming Catalyst (Co-PI)**
Grant no: 1/S/1433. Project funded by Ministry of Education, Saudi Arabia. Approved Budget: 491,000 SAR.
5. **Applications of Zeolite Catalysts in Waste to Energy Technologies (PI)**
Grant no: 2/S/1438. Funding Agency: Ministry of Education, Saudi Arabia.
6. **Development of Energy Recovery Technologies from Municipal Solid Waste (Co-PI)**
Grant no: 2/S/1435. Project funded by Ministry of Education, Saudi Arabia. Approved Budget: 65,000 SAR.
7. **Exploring the Biological and Chemical Methods of Hydrogen Production in Saudi Arabia (Co-PI)**
Project ID: 1/S/1438. Project funded by Ministry of Education, Saudi Arabia. Approved Budget: 154,000 SAR.
8. **Development of Multi-residue Analytical Technology for Several Organic Contaminants and its Application on Selected Occupational Settings (Co-PI)**
Project ID: 14-MED2643-03. Project approved by NSTIP-KACST, Saudi Arabia. Requested Budget: 1,357,295 SAR.
9. **Monitoring and Modelling the Levels of Various Air Pollutants in Jeddah, Saudi Arabia (PI)**
Grant no: 1/A/1436. Project funded by Ministry of Education, Saudi Arabia. Approved Budget: 96,000 SAR.
10. **Assessment of Occupational Health and Safety Standards and Practices at Motor Vehicle Repair Workshops in Jeddah (Co-PI)**
Grant No: G-611-155-38. Project approved by DSR (KAU) in Mar 2017. Budget: 50,000 SAR.

Completed International Research Projects

University of Leeds, UK

(2007 - 2014)

1. **Development of Phase Change Materials**
Project funded by DGP Intelsius Limited (Postdoc Research Associate)
2. **Synthesis of Nanoparticles in Microemulsions**
Project funded by Procter and gamble (Postdoc Research Associate)
3. **Production of Biodiesel from Various Sources**
University of Leeds, UK (Collaborator)
4. **Synthesis and Characterization of Zinc Carbonate Nanoparticles**
Project funded by Procter and gamble (Visiting Research Fellow)
5. **In Situ Hydrothermal Synthesis and Process Characterization of TiO₂ Nanoparticles**
Project funded by UK EPSRC. (PhD Project)

Publications

Peer Reviewed Journal Papers

(Impact Factor: > 310, Citations: > 2880, h-index: 29, i10-index: 52)

1. Z Hameed, M Aslam, Z Khan, K Maqsood, AE Atabani, M Ghauri, MS Khurram, **M Rehan**, AS Nizami. Gasification of municipal solid waste blends with biomass for energy production and resources recovery: Current status, hybrid technologies and innovative prospects. *Renewable and Sustainable Energy Review* (*accepted*) (IF 12.11)
2. K Moustakas, **M Rehan**, M Loizidou, AS Nizami, M Naqvi. 2020. Energy and resource recovery through integrated sustainable waste management. *Applied Energy*. 261, 114372 (IF 8.848).
3. M Kashif, MB Awan, S Nawaz, M Amjad, B Talib, M Farooq, AS Nizami, **M Rehan**. 2020. Untapped renewable energy potential of crop residues in Pakistan: Challenges and future directions. *Journal of Environmental Management*, 256, p.109924 (IF 5.647).
4. MN Anwar, A Fayyaz, NF Sohail, MF Khokhar, M Baqar, A Yasar, K Rasool, A Nazir, MUF Raja, **M Rehan**, M Aghbashlo. 2020. CO₂ utilization: Turning greenhouse gas into fuels and valuable products. *Journal of Environmental Management*, 260, p.110059 (IF 5.647).
5. M Waqas, Z Asam, **M Rehan**, MN Anwar, RA Khattak, IMI Ismail, M Tabatabaei, AS Nizami, 2020. Development of biomass-derived biochar for agronomic and environmental remediation applications. *Biomass Conversion and Biorefinery*, pp.1-23 (IF 2.602)
6. MS Ahmed, KP Nair, MS Khan, A Algahtani, **M Rehan**. 2020. Evaluation of date seed (*Phoenix dactylifera* L.) oil as crop base stock for environment friendly industrial lubricants. *Biomass Conversion and Biorefinery*, 1-10 (IF 2.602)
7. N Khan, MD Khan, S Sabir, AS Nizami, AH Anwer, **M Rehan**, M Zain Khan. 2019. Deciphering the effects of temperature on bio-methane generation through anaerobic digestion. *Environmental Science and Pollution Research*. <https://doi.org/10.1007/s11356-019-07245-w>. (IF 3.056).
8. M Munir, M Saeed, M Ahmad, A Waseem, **M Rehan**, AS Nizami, M Arshad, S Sultana. 2019. Sustainable production of bioenergy from novel non-edible seed oil (*Prunus cerasoides*) using bimetallic impregnated montmorillonite clay catalyst. *Renewable & sustainable energy Reviews*. 109, 321–332 (IF 12.11).
9. U Rashid, AS Nizami, **M Rehan**. Waste Biomass Utilization for Value-added Green Products. *Current Organic Chemistry*. 2019, 23, 141497. (IF 1.933).
10. K Moustakas, M Loizidou, **M Rehan**, AS Nizami. A review of recent developments in renewable and sustainable energy systems: Key challenges and future perspective. *Renewable and Sustainable Energy Reviews*. 2019, 109418. ((IF 12.11).
11. J Gardy, **M Rehan**, A Hassanpour, X Lai, AS Nizami. 2019. Advances in nano-catalysts based biodiesel production from non-food feedstocks. *Journal of Environmental Management*, 249, 109316. (IF 5.647).
12. AH Anwer, MD Khan, N Khan, AS Nizami, **M Rehan**, MZ Khan. 2019. Development of novel MnO₂ coated carbon felt cathode for microbial electroreduction of CO₂ to biofuels. *Journal of Environmental Management*. 249, 109376. (IF 5.647).
13. **M Rehan**, AS Nizami, U Rashid, MR Naqvi. 2019. Editorial: Waste biorefineries: future energy, green products and waste treatment. *Front. Energy Res*. 7:55 (IF 2.746).

14. D Pant, S Mishra, AS Nizami, **M Rehan**, RV Leeuwen, S Tabacchioni, R Goel, P Sarma, R Bakker, N Sharma, K Kwant, L Diels, K Elst. 2019. Towards the development of a biobased economy in Europe and India. *Critical Reviews in Biotechnology*. 39(6), 779-799 (IF 8.108).
15. HKS Panahi, M Tabatabaei, M Aghbashlo, M Dehghani, **M Rehan**, AS Nizami. 2019. Recent updates on the production and upgrading of bio-crude oil from microalgae. *Bioresource Technology Reports*. 7: 100216.
16. MI Khan, MK Almesfer, M Danish, IH Ali, H Shoukry, R Patel, J Gardy, AS Nizami, **M. Rehan**. 2019. Potential of Saudi natural clay as an effective adsorbent in heavy metals removal from wastewater. *Desalination and Water Treatment*. 158, 140–151 (IF 0.854).
17. J Alghazo, O Ouda, F Alanezi, ZZ Asam, **M Rehan**, MH Salameh. AS Nizami. 2019. Potential of electronic waste recycling in Gulf Cooperation Council states: an environmental and economic analysis. *Environmental Science and Pollution Research*. 1-10 (IF 3.527).
18. HA Smail, **M Rehan**, KM Shareef, Z Ramli, AS Nizami, J Gardy, 2019. Synthesis of uniform mesoporous zeolite ZSM-5 catalyst for friedel-crafts acylation. *ChemEngineering*. 3: 35.
19. R Miandad, **M Rehan**, MA Barakat, AS Aburiazza, H Khan, IMI Ismail, J Dhavamani, J Gardy, A Hassanpour, AS Nizami, 2019. Catalytic Pyrolysis of Plastic Waste: Moving Toward Pyrolysis Based Biorefineries. *Front. Energy Res*. 7:27. doi: 10.3389/fenrg.2019.00027 (IF 2.746).
20. J Gardy, A Osatiashtiani, O Céspedes, A Hassanpour, X Lai, A Lee, K Wilson, **M Rehan**. 2018. A magnetically separable $\text{SO}_4/\text{Fe-Al-TiO}_2$ solid acid catalyst for biodiesel production from waste cooking oil. *Applied Catalysis B: Environmental*, 234, 268–278 (IF 16.683).
21. MN Anwar, A Fayyaz, NF Sohail, MF Khokhar, M Baqar, WD Khan, K Rasool, **M Rehan**, AS Nizami. 2018. CO_2 capture and storage: A way forward for sustainable environment. *Journal of Environmental Management*. 226: 131-144 (IF 5.647).
22. N Khan, MD Khan, AS Nizami, **M Rehan**, A Shaida, A Ahmad, MZ Khan. 2018. Energy generation through bioelectrochemical degradation of pentachlorophenol in microbial fuel cell. *RSC Advances*, 8(37), 20726-20736 (IF 3.119).
23. SR Naqvi, A Bibi, M Naqvi, T Noor, AS Nizami, **M Rehan**, M Ayoub. 2018. New trends in improving gasoline quality and octane through naphtha isomerization: a short review. *Applied Petrochemical Research*, 1-9.
24. **M Rehan**, A Demirbas, J Gardy, AS Nizami. 2018. Waste to biodiesel: A preliminary assessment for Saudi Arabia. *Bioresource Technology*. 250, 17-25 (IF 7.539).
25. AS Nizami, **M Rehan**. 2018. Towards nanotechnology-based biofuel industry, Editorial. *Biofuel Research Journal* 18 (2018) 798-799.
26. M Naqvi, E Dahlquist, J Yan, S Naqvi. AS Nizami, A Salman, M Danish, U Farooq, **M Rehan**, Z Khan. Polygeneration System Integrated with Small Non-wood Pulp Mills for Substitute Natural Gas Production. *Applied Energy*, 224, 636–646 (IF 8.848).
27. M Waqas, AS Aburiazza, R Minadad, **M Rehan**, MA Barakat, AS Nizami. 2018. Development of Biochar as Fuel and Catalyst in Energy Recovery Technologies. *Journal of Cleaner Production*. 188, 477–488, (IF 7.246).
28. MA Balkhyour, I Ahmad, **M Rehan**, 2019. Assessment of Personal Protective Equipment use and Occupational Exposures in Small Industries in Jeddah: Health Implications for Workers. *Saudi Journal of Biological Sciences*, 26(4), 653-659 (IF 2.802).
29. R Miandad, R Kumar, C Basheer, A Aburiazza, AS Nizami, **M Rehan**. 2018. Untapped conversion of plastic waste char into carbon-metal double layered oxides for adsorption of Congo red. *Journal of Colloid and Interface Science*. 511, 402–410 (IF 7.489).
30. R Miandad, MA Barakat, **M Rehan**, AS Aburiazza, J. Gardy, AS, Nizami. 2018. Effect of Advanced Catalysts on Tire Waste Pyrolysis Oil. *Process Safety and Environmental Protection*. 116, 542-552 (IF 4.966).
31. N Rahmanian, **M Rehan**, A Sumani, AS Nizami 2018. Effect of Packing Structure on CO_2 Capturing Process. *Chemical Engineering Transactions*, 70, 1891-1896.
32. OKM Ouda, HP Peterson, **M Rehan**, Y Sadeq, JM Alghazo, AS Nizami. A Case Study of Sustainable Construction Waste Management in Saudi Arabia. 2018. *Waste and Biomass Valorization*. 9(12), 2541-2555 (IF 2.851).
33. J Gardy, A Hassanpour, X Lai, MH Ahmed, **M Rehan**. 2017. Biodiesel production from used cooking oil using a novel surface functionalised TiO_2 nano-catalyst. *Applied Catalysis B: Environmental*. 207, 297–310 (IF 16.683).
34. **M Rehan**, R Miandad, IMI Ismail, A Demirbas, AS Nizami. 2017. Effect of zeolite catalysts on pyrolysis liquid oil. *International Biodeterioration & Biodegradation*. 119, 162-175 (IF 4.074).

35. R Miandad, MA Barakat, **M Rehan**, AS Aburizaiza, AS Nizami. Plastic waste to liquid oil through catalytic pyrolysis using natural and synthetic zeolite catalysts. *Waste Management*. 69, 66–78 (IF 5.448).
36. AS Nizami, **M Rehan**, M Waqas, M Naqvi, OKM Ouda, K Shahzad, R Miandad, MZ Khan, M Syamsiro, IMI Ismail, D Pant. *Waste Biorefineries: Enabling Circular Economies in Developing Countries*. *Bioresource Technology*. 241: 1101-1117 (IF 7.539).
37. MZ Khan, AS Nizami, **M Rehan**, OKM Ouda, S Sultana, IMI Ismail, K Shahzad. 2017. Microbial electrolysis cells for hydrogen production and wastewater treatment: a case study of Saudi Arabia. *Applied Energy*. 185 (1): 410–420 (IF 8.848).
38. K Shahzad, AS Nizami, AO BaFail, M Sagir, **M Rehan**, S Maier, MZ Khan, OKM Ouda, IMI Ismail, JM Basahi. 2017. Biodiesel production potential from fat fraction of municipal waste in Makkah. *PLoS ONE* 12(2): e0171297 (IF 2.74)
39. MD Khan, N Khan, AS Nizami, **M Rehan**, S Sabir, MZ Khan. 2017. Effect of co-substrates on biogas production and anaerobic decomposition of pentachlorophenol. *Bioresource technology* 238: 492-501 (IF 7.539).
40. R Miandad, MA Barakat, AS Aburizaiza, **M Rehan**, IMI Ismail, AS Nizami. 2017. Effect of plastic waste types on pyrolysis liquid oil. *International Biodeterioration & Biodegradation*. 119, 239–252 (IF 4.074)
41. AS Nizami, K Shahzad, **M Rehan**, OKM Ouda, MZ Khan, IMI Ismail, T Almeelbi, JM Basahi, A Demirbas. 2017. Developing Waste Biorefinery in Makkah: A Way Forward to Convert Urban Waste into Renewable Energy. *Applied Energy*. 186 (2): 189–196 (IF 8.848).
42. OKM Ouda, Y Khalid, AH Ajbair, **M Rehan**, K Shahzad, I Wazeer, AS Nizami. 2017. Long-term desalinated water demand and investment requirements: a case study of Riyadh. *Journal of Water Reuse and Desalination*. DOI: 10.2166/wrd.2017.107 (IF 2).
43. T Iqbal, AS Nizami, S Eckhoff, MLA Barreto, Y Sadeh, **M Rehan**, WM Budzianowski, OKM Ouda, K Shahzad. 2017. Biomass conservation using an optimised drying process for energy Sorghum Bagasse. *Renewable Energy Focus*, 19–20, 1–7.
44. S Munir, TM Habeebullah, AMF Mohammed, EA Morsy, **M Rehan**. K Ali. 2017. Analysing PM_{2.5} and its association with PM₁₀ and meteorology in the arid climate of Makkah, Saudi Arabia. *Aerosol and Air Quality Research*. 17: 453–464 (IF 2.606).
45. **M Rehan**, AS Nizami, ZZ Asam, O Ouda, J Gardy, G Raza, M Naqvi, IM Ismail. 2017. Waste to Energy: A Case Study of Madinah City. *Energy Procedia*. 142, 688-693.
46. AS Nizami, **M Rehan**, M Naqvi, O Ouda, M Syamsiro, M Waqas, R Miandad, ZZ Asam, IMI Ismail. 2017. Energy, Economic and Environmental Savings by Waste Recycling: A Case Study of Madinah City. *Energy Procedia*. 142, 910-915.
47. H Qari, **M Rehan**, AS Nizami. 2017. Key issues in microalgae biofuels: a short review. *Energy Procedia*. 142, 898-903.
48. **M Rehan**. N Rahmanian, X Hyatt, AS Nizami, 2017. Energy Savings in CO₂ Capture System through Intercooling Mechanism. *Energy Procedia*. 42, 3683-3688.
49. I Ahmad, **M Rehan**, MA Balkhyour, IM Ismail. 2017. Assessment of Occupational Health and Safety in Motor Vehicle Repair Workshops in Jeddah. *Biosciences Biotechnology Research Asia*, 14(3), 901-913.
50. I Ahmad, MA Balkhyour, TM Abokhashabah, IM Ismail, **M Rehan**. 2017. Occupational Musculoskeletal Disorders among Taxi Industry Workers in Jeddah, Saudi Arabia. *Biosciences Biotechnology Research Asia*, 14(2), 593-606.
51. I Samun, R Saeed, M Abbas, **M Rehan**, AS Nizami, ZZ Asam. 2017. Assessment of Bioenergy Production from Solid Waste. *Energy Procedia*. 142, 655-660.
52. AS Qureshi, I Khushk, AA Simiar, CH Ali, M Naqvi, M Danish, A Ahmed, H Majeed, ANM Jatt, **M Rehan**, AS Nizami. 2017. Fruit Waste to Energy through Open Fermentation. *Energy Procedia*. 142: 904-909.
53. I Ahmad, MA Balkhyour, TM Abokhashabah, IM Ismail, **M Rehan**. 2017. Workplace Safety and Health Conditions and Facilities in Small Industries in Jeddah, Saudi Arabia. *Journal of Safety Studies*, 3(1), 37-52.
54. M Naqvi, E Dahlquista, AS Nizami, M Danish, S Naqvi, U Farooq, AS Qureshi, **M Rehan**. 2017. Gasification integrated with small chemical pulp mills for fuel and energy production. *Energy Procedia*. 142: 977-983.
55. OKM Ouda, **M Rehan**, N Nader, AS Nizami. Environmental and Economic Benefits of Recovered Paper: A Case Study of Saudi Arabia. *Energy Procedia*. 142, 3753-3758.

56. M Syamsiro, H Saptoadi, AS Nizami, **M Rehan**. 2017. Pyrolysis of compact disc (CD) case wastes to produce liquid and solid fuels. *Energy Procedia*. 145, 484-489.
57. OKM Ouda, SA Raza, AS Nizami, **M Rehan**, R Al-Waked, NE Korres. 2016. Waste to energy potential: A case study of Saudi Arabia. *Renewable and Sustainable Energy Reviews*. 61:328–340 (IF 12.11).
58. R Miandad, AS Nizami, **M Rehan**, M Barakat, MI Khan, A Mustafa, IMI Ismail, JD Murphy. 2016. Influence of temperature and reaction time on the conversion of polystyrene waste to pyrolysis liquid oil. *Waste Management*. 58: 250–259 (IF 5.448).
59. AS Nizami, OKM Ouda, **M Rehan**, AMO El-Maghraby, J Gardy, A Hassanpour, S Kumar, IMI Ismail. 2016. The potential of Saudi Arabian natural zeolites in energy recovery technologies. *Energy*, 108:162-171 (IF 6.082).
60. R Miandad, MA Barakat, AS Aburizaiza, **M Rehan**, AS Nizami. 2016. Catalytic Pyrolysis of Plastic Waste: A Review. *Process Safety and Environmental Protection*. 102:822-838 (IF 4.966).
61. N Ali, IMI Ismail, SAMAS Eqani, G Malarvannan, MW Kadi, **M Rehan**, A Covaci. 2016. Brominated and Organophosphate Flame Retardants in Indoor Dust of Jeddah, Kingdom of Saudi Arabia: Implications for Human Exposure. *Science of the Total Environment*. 569–570: 269–277 (IF 6.551).
62. A Demirbas, **M Rehan**, BO Al-Sasi, AS Nizami. Evaluation of natural gas hydrates as a future methane source. 2016. *Petroleum Science and Technology*. 34(13), 1204-1210 (IF 0.976).
63. SAMAS Eqani, R Khalid, N Bostan, Z Saqib, J Mohmand, **M Rehan**, N Ali, IA Katsoyiannis, H Shen. 2016. Human lead (Pb) exposure via dust from different land use settings of Pakistan: A case study from two urban mountainous cities. *Chemosphere*, 155:259-265 (IF 5.778).
64. **M Rehan**, AS Nizami, K Shahzad, OKM Ouda, IMI Ismail, T Almeelbi, T Iqbal, A Demirbas. Pyrolytic liquid fuel: a source of renewable electricity generation in Makkah. 2016. *Energy Sources, Part A: Recovery, Utilization, and Environmental Effects* 38 (17): 2598-2603 (IF 1.184).
65. **M Rehan**, AS Nizami, O Taylan, BO Al-Sasi, A Demirbas. 2016. Determination of wax content in crude oil. *Petroleum Science and Technology* 34 (9): 799-804 (IF 0.976).
66. S Munir, S Anwar, **M Rehan**. Assessing the impact of ground level ozone on agricultural crops in the United Kingdom. 2016. *International Journal of Agricultural and Environmental Research*. 2(3): 212-224.
67. I Ahmad, **M Rehan**, MA Balkhyour1, M Abbas, JM Basahi, T Almeelbi, IMI Ismail. 2016. Review of environmental pollution and health risks at motor vehicle repair workshops: challenges and perspectives for Saudi Arabia. *International Journal of Agricultural and Environmental Research*, 2(1): 1-22.
68. **M Rehan**, X Lai, GM Kale. 2015. An in situ EDXRD kinetic and mechanistic study of the hydrothermal crystallization of TiO₂ nanoparticles from nitric acid peptized sol-gel. *CrystEngComm*, 17(9), 2013-2020 (IF 3.117).
69. AS Nizami, **M Rehan**, OKM Ouda, K Shahzad, Y Sadeq, T Iqbal, IMI Ismail. 2015. An argument for developing waste-to-energy technologies in Saudi Arabia, *Chemical Engineering Transactions*, 45:337-342.
70. MS Tahir, K Shahzad, Z Shahid, M Sagir, **M Rehan**, AS Nizami. 2015. Producing methane enriched biogas using solvent absorption method, *Chemical Engineering Transactions*, 45, 1309-1314.
71. K Shahzad, **M Rehan**, IMI Ismail, M Sagir, MS Tahir, B Bertok, Nizami AS. 2015. Comparative life cycle analysis of different lighting devices, *Chemical Engineering Transactions*, 45, 631-636.
72. N Rahmanian, SH Bt Ali, M Homayoonfard, NJ Ali, **M Rehan**, Y Sadaf, AS Nizami. 2015. Analysis of physiochemical parameters to evaluate the drinking water quality in the state of Perak, Malaysia. *Journal of Chemistry*. vol. 2015, Article ID 716125, 1-10 (IF 1.79).
73. Y Sadaf, AS Nizami, SA Batool, MN Chaudhary, OKM Ouda, ZZ Asam, K Habib, **M Rehan**, A Demibras. 2015. Waste-to-energy and recycling value for developing integrated solid waste management plan in Lahore. *Energy Sources, Part B: Economics, Planning, and Policy*. 11(7): 571 – 581 (IF 1.758)
74. M Li, S Qiu, Y Lu, K Wang, X Lai, **M Rehan**. 2014. Investigation of the effect of hydroxypropyl methylcellulose on the phase transformation and release profiles of carbamazepine-nicotinamide cocrystal. *Pharmaceutical Research*, 31,2312-2325 (IF 3.242).
75. T Alhawi, **M Rehan**, D York, X Lai. (2015). Synthesis of Zinc Carbonate Hydroxide Nanoparticles Using Microemulsion Process. *Procedia Engineering*, 102, 346-355.
76. T Alhawi, **M Rehan**, D York, X Lai. (2015). Hydrothermal synthesis and characterization of zinc carbonate nanoparticles. *Procedia Engineering*, 102, 356-361.
77. J Gardy, A Hassanpour, X Lai, A Cunliffe, **M Rehan**. (2014). The influence of blending process

on the quality of rapeseed oil-used cooking oil biodiesels. International scientific Journal, Journal of Environmental Science, (3) 233-240.

78. **M Rehan**, X Lai, GM Kale. (2011). Hydrothermal synthesis of titanium dioxide nanoparticles studied employing in situ energy dispersive X-ray diffraction. CrystEngComm, 13 (11), 3725–3732 (IF 3.117).
79. M Munir, M Ahmad, M Saeed, A Waseem, AS Nizami, S Sultana, M Zafar, **M Rehan**. Biodiesel production from novel non-edible caper (*Capparis spinosa L.*) seeds oil employing Cu-Ni doped ZrO₂ catalyst. Renewable and Sustainable Energy Review (*Under Review*).

Book

80. **M Rehan**, AS Nizami, U Rashid, MR Naqvi, eds. (2019). Waste Biorefineries: Future Energy, Green Products and Waste Treatment. Lausanne: Frontiers Media. doi: 10.3389/978-2-88945-993-3

Book Chapters

81. M Waqas, **M Rehan**, MD Khan, AS Nizami. 2018. Conversion of food waste to fermentation products. In the book, 'Encyclopedia of food security and sustainability,' edited by Pasquale Ferranti, Elliot Berry, Anderson Jock. ISBN: 9780128126875. Elsevier.
82. R Miandad, **M Rehan**, OKM Ouda, MZ Khan, IMI Ismail, K Shahzad, AS Nizami. 2017. Waste-to-Hydrogen Energy in Saudi Arabia: Challenges and Perspectives. In book, 'Biohydrogen Production: Sustainability of Current Technology and Future Perspective'. DOI 10.1007/978-81-322-3577-4_11. Springer India.
83. M Waqas, **M Rehan**, AS Aburiazaiza, AS Nizami. 2018. Wastewater Biorefinery based on the microbial electrolysis cell: opportunities and challenges. In the book, 'Progress and Recent Trends in Microbial Fuel Cells,' edited by K Dutta and P Kundu. Elsevier Inc. USA. DOI: 10.1016/B978-0-444-64017-8.00017-8
84. M Saghir, **M Rehan**, AS Nizami. 2018. Recent trends in gasification based waste to energy. In the book, 'Gasification for low-grade feedstock' edited by Y Yun. ISBN 978-1-78923-288-2. Intech Publisher. DOI: 10.5772/intechopen.74487
85. R Miandad, M Barakat, **M Rehan**, IMI Ismail, AS Nizami. 2016. The Energy and Value-Added Products from Pyrolysis of Waste Plastics. In book, 'Recycling of Solid Waste for Biofuels and Biochemicals' under Series Title: Environmental Footprints and Eco-design of Products and Processes. DOI 10.1007/978-981-10-0150-5_12. Springer Science+Business Media, Singapore.
86. H Hosseinzadeh-Bandbafha, M Tabatabaei, M Aghbashlo, **M Rehan**, AS Nizami. 2020. Determining key issues in life-cycle assessment of waste biorefineries. In Waste Biorefinery (pp. 515-555). Elsevier.

Published Thesis

87. **M Rehan**. 2012. In situ hydrothermal synthesis and process characterization of titanium dioxide nanoparticles. PhD Thesis. British Library. EThOS (e-theses online service), available online; <http://ethos.bl.uk/OrderDetails.do?uin=uk.bl.ethos.582157>.

Peer Reviewed Conference Papers

88. M Alzahrani, **M Rehan**, AS Nizami. Potential of Waste-to-Energy Technology in Saudi Arabia – Impact of Hajj and Umrah Visitors and Global Waste Reduction Trends. 69th Canadian Chemical Engineering Conference, October 20-23, 2019 in Halifax, NS, Canada.
89. M Waqas, **M Rehan**, MN Anwar, MD Khan, AS Nizami. 2019. Agronomic and Environmental Remedial Benefits of Biochar: Current Challenges, and Future Perspectives. HERAKLION 2019. 7th International Conference on Sustainable Solid Waste Management, 26-29 June 2019, Crete. Greek.
90. I Ali, H Bahaitham, M Saleem, A Salam, R Naebulharam, AS Nizami, **M Rehan**. 2019. Linear versus Non-linear Adsorption Kinetics of Methylene Blue on Raw and Chemically Activated

- Sawdust. HERAKLION 2019. 7th International Conference on Sustainable Solid Waste Management, 26-29 June 2019, Crete. Greek.
91. MN Anwar, A Fayyaz, NF Sohail, M Baqar, M Iftikhar, **M Rehan**, M Waqas, AS Nizami. 2019. Investigation of Carbon Dioxide Sequestration Potential of Pure and Nano Particles Doped Biochar. HERAKLION 2019. 7th International Conference on Sustainable Solid Waste Management, 26-29 June 2019, Crete. Greek.
 92. AS Nizami, **M Rehan**. Waste-driven factory to integrate waste-to-energy technologies. The 3rd International Conference on Bioresources, Energy, Environment, and Materials Technology 2019 (BEEM2019). The Hong Kong Polytechnic University, 12-15 June 2019.
 93. M Aslam, AL Khan, AS Nizami, **M Rehan**, J Kim. 2019. Anaerobic treatment of domestic sewage using novel anaerobic fluidized bed membrane bioreactor under energy recovery and biofouling control. HERAKLION 2019. 7th International Conference on Sustainable Solid Waste Management, 26-29 June 2019, Crete. Greek.
 94. JM Alghazo, F Alanezi, **M Rehan**, AS Nizami, MH Salameh, OKM Ouda. 2018. The Economic and Environmental Value of Electronic Waste Recycling in the GCC countries. NAXOS2018 (6th International Conference on Sustainable Solid Waste Management) 13-16 June 2018, Greece.
 95. **M Rehan**, IMI Ismail, AS Nizami. Municipal solid waste and circular economies: a case study of Madinah city. Sardinia 2017. Sixteenth International Waste Management and Landfill Symposium. 2 - 6 October 2017.
 96. **M Rehan**, J Gardy, A Demirbas, WM Budzianowski, AS Nizami. Waste to biodiesel refinery: a case study of Saudi Arabia. 2nd Renewable Energy Sources - Research and Business RESRB 2017 conference, June 19-21, 2017, Wrocław, Poland. RESRB2017.0059.
 97. J Gardy, **M Rehan**, A Hassanpour, X Lai, AS Nizami. Influence of homogenous and heterogeneous catalysts on biodiesel production. 2nd Renewable Energy Sources - Research and Business RESRB 2017 conference, June 19-21, 2017, Wrocław, Poland. RESRB2017.0060.
 98. M Syamsiro, S Maarif, W Widyawidura, AS Nizami, **M Rehan**, IMI Ismail. Feasibility study of pilot scale gasification systems for rice husk power generation in Java Island, Indonesia. 2nd Renewable Energy Sources - Research and Business RESRB 2017 conference, June 19-21, 2017, Wrocław, Poland. RESRB2017.0069.
 99. AS Nizami, **M Rehan**, M Syamsiro, OKM Ouda. The recycling of municipal solid waste and circular economies: a case study of Saudi Arabia. 2nd Renewable Energy Sources - Research and Business RESRB 2017 conference, June 19-21, 2017, Wrocław, Poland. RESRB2017.0067.
 100. R Miandad, AS Aburiazza, **M Rehan**, MAEF Barakat, IM Ismail, AS Nizami. Thermal and catalytic pyrolysis of waste tires. 8th Student Scientific Forum. 2017. King Abdulaziz University, Jeddah, Saudi Arabia.
 101. AS Nizami, **M Rehan**, K Shahzad, IMI Ismail. Development of algae biorefinery in Saudi Arabia: a source of bioenergy and bioproducts. Conference: Renewable Energy Sources - Research and Business (RESRB2016), June 22-24, 2016, Wrocław, Poland, RESRB2016.0021.
 102. T Iqbal, AS Nizami, S Eckhoff, MLA Barreto, Y Sadef, **M Rehan**, K Shahzad. Biomass conservation using an optimized drying process for energy sorghum bagasse. Conference: Renewable Energy Sources - Research and Business (RESRB2016), June 22-24, 2016. Wrocław, Poland. RESRB2016.0016.
 103. AS Nizami, **M Rehan**, IMI Ismail, T Almeelbi, OKM Ouda. 2015. Waste biorefinery in Makkah: a solution to convert waste produced during Hajj and Umrah Seasons into wealth. Conference: 15th Scientific Symposium for Hajj, Umrah and Madinah visit. Held in May 2015 in Madinah, Saudi Arabia.
 104. AS Nizami, **M Rehan**, J Gardy, A Hassanpour, T Iqbal, Iqbal MI Ismail. 2014. The potential of natural zeolites in energy recovery technology from waste plastic. The 7th International Conference on Sustainable Energy & Environmental Protection (SEEP), the British University in Dubai- UAE November 23-25.
 105. AS Nizami, **M Rehan**, R Rafique, IM Ismail. 2014. Development of waste to energy technologies in Saudi Arabia: perspectives and challenges. The 7th International Conference on Sustainable Energy & Environmental Protection (SEEP), the British University in Dubai- UAE in November 23-25.
 106. **M Rehan**, AS Nizami, K Shahzad, IMI Ismail, T Almeelbi, OKM Ouda. Conversion of plastic waste into energy and value-added products in Makkah city. *Accepted in* Conference: 16th Scientific Symposium for Hajj, Umrah and Madinah visit. Will be held in May 2016 in Makkah, Saudi

Arabia.

107. AS Nizami, S Zafar, MB Baig, **M Rehan**, K Shahzad, IMI Ismail, OKM Ouda. The environmental and economic value of waste recycling in Makkah city. *Accepted in Conference: 16th Scientific Symposium for Hajj, Umrah and Madinah visit.* Will be held in May 2016 in Makkah, Saudi Arabia.
108. J Gardy, A Hassanpour, X Lai, M Ahmed, **M Rehan**. (2016). A novel green solid acid nano-catalyst for biodiesel production from used cooking oil. Accepted in Conference. EUBCE, 24th European Biomass Conference & Exhibition. Will be held in Amsterdam, The Netherlands, 6- 9 June 2016.
109. AS Nizami, MI Rashid, **M Rehan**, K Shahzad, S Zafar, OKM Ouda, IMI Ismail. 2016. The Potential of construction and demolition waste recycling in Saudi Arabia. 2016. 1st Saudi Conference on Environment – King Khalid University, 8-9 March 2016.
110. K Shahzad, **M Rehan**, AS Nizami, IMI Ismail. Sustainable energy systems: Life cycle energy efficiency of lighting technology. 2016. 1st Saudi Conference on Environment – King Khalid University, 8-9 March 2016.
111. R Miandad, M Barakat, **M Rehan**, I Khan, IMI Ismail, AS Nizami. The effect of temperature and retention time on the conversion of plastic waste into liquid fuel through pyrolysis. 7th Scientific Forum (SSF, 2015) held at King Abdulaziz University, Jeddah, KSA. 9-10 December, 2015.
112. T Alhawi, **M Rehan**, D York, X Lai. (2014). Hydrothermal synthesis and characterization of zinc carbonate nanoparticles. 7th World Congress on Particle Technology, May 2014, China.
113. T Alhawi, **M Rehan**, D York, X Lai. (2014). Synthesis, characterization and control of zinc carbonate nanoparticles via the microemulsion route. 7th World Congress on Particle Technology, Held in May 2014, China.
114. J Gardy, C Wosu, A Hassanpour, X Lai, **M Rehan**. (2014). The effect of process parameters on the production of biodiesel from various feedstocks. International Bioenergy Conference, Held in 11-13 March 2014, Manchester, United Kingdom.
115. J Gardy, A Hassanpour, X Lai, A Cunliffe, **M Rehan**. (2015). The influence of blending process on the quality of rapeseed oil-used cooking oil biodiesels. International Conference on Environment and Renewable Energy (ICERE), Held in 7-8 May, Paris, France.
116. S Witharana, **M Rehan**, H. Chen, Y Ding. (2010). Stability and thermophysical properties of alumina nanofluids, Nanofluids: Fundamentals & Applications II, Held in 15-19 August, Canada.
117. **M Rehan**, X Lai, GM Kale. (2008). In Situ investigation of hydrothermal synthesis of TiO₂ nanoparticles using synchrotron radiation x-ray diffraction. Published in Proceedings of 17th International Symposium on Industrial Crystallization, (Edited J Ulrich, P Jansens and M Roelands), ISBN 9789076019277, (1), 157-164.

Conference and Seminar Presentations

1. CO₂ poster
2. **M Rehan**. Development of renewable energy, fuels and advanced materials in Saudi Arabia. CEES, King Abdulaziz University, 27 April 2017 (Invited lecture).
3. **M Rehan**, I.M. Ismail, AS Nizami. Hydrogen production and wastewater treatment through MEC technology in Saudi Arabia. KAUST research conference WDRC ‘Changing Paradigms of wastewater treatment from waste to resource.’ 27-29 March 2017. King Abdullah University of Science and Technology (KAUST), Thuwal. Saudi Arabia (Poster).
4. R Miandad, MAEF Barakat, AS Aburiazaiza, **M Rehan**, IM Ismail, AS Nizami. Catalytic pyrolysis of plastic waste with natural zeolite. 9th International Workshop on Advanced Material. Ras Al Khaimah, UAE. 18-22 Feb 2017.
5. **M Rehan**. Air Pollution Monitoring and Control in Saudi Arabia: A Case Study of Makkah. Air Pollution Workshop in CEES, KAU 21 February 2016 (Invited lecture).
6. **M Rehan**, AS Nizami, IMI Ismail, T Almeelbi, OKM Ouda. 2015. Waste biorefinery in Makkah: a solution to convert waste produced during Hajj and Umrah Seasons into wealth. Conference: 15th Scientific Symposium for Hajj, Umrah and Madinah visit. Held in May 2015 in Madinah, Saudi Arabia (Poster).
7. **M Rehan**, AS Nizami, K Shahzad, IMI Ismail, T Almeelbi, OKM Ouda. Conversion of plastic waste into energy and value-added products in Makkah city. 16th Scientific Symposium for Hajj, Umrah

- and Madinah visit. May 2016 in Makkah, Saudi Arabia (Poster).
8. AS Nizami, S Zafar, MB Baig, **M Rehan**, K Shahzad, IMI Ismail, OKM Ouda. The environmental and economic value of waste recycling in Makkah city. 16th Scientific Symposium for Hajj, Umrah and Madinah visit. May 2016 in Makkah, Saudi Arabia (Oral).
 9. R Miandad, M Barakat, **M Rehan**, I Khan, IMI Ismail, AS Nizami. Influence of temperature and retention time on the pyrolytic conversion of Saudi Arabian waste plastic to liquid fuel. International conference on Applied Chemistry (ICAC, 2015), King Abdulaziz University, Jeddah, KSA. 18-19 November, 2015 (Poster).
 10. K Shahzad, **M Rehan**, AS Nizami, IMI Ismail. Sustainable energy systems: Life cycle energy efficiency of lighting technology. 2016. 1st Saudi Conference on Environment – King Khalid University, 8-9 March 2016 (Oral).
 11. AS Nizami, **M Rehan**. Potential of recycling and waste-to-energy in Jeddah. 5th Edition, Waste Management & Recycling Summit, Moving the Kingdom of Saudi Arabia towards a Sustainable Future and Zero Waste. Conference organized by Nispana Innovative Platforms on 11-12 October, 2015 at Le Meridian hotel Jeddah, Saudi Arabia (Invited Talk).
 12. AS Nizami, **M Rehan**. Where are we heading with renewable and conventional energy resources? GCC Environment Forum – GEF conference 2015, held on 24-26 May at Al Faisaliah hotel, Riyadh, KSA (Invited Talk).
 13. AS Nizami, **M Rehan**. Waste-to-energy (WTE) in Jeddah: options and opportunities. Kingdom Waste Management Workshop. Fleming Gulf, held on 11-12 May 2015, Jeddah Marriott hotel, Saudi Arabia (Invited Talk).
 14. AS Nizami, **M Rehan**. Waste biorefinery in Haramain Sharifain cities - converting waste into wealth. 5th International Envirocities Conference 2015 on 'From Waste to Energy', held in Taibah University, Medina on 5-7 May, 2015 (Invited Talk).
 15. AS Nizami, **M Rehan**. Integrated waste biorefinery in Makkah city for treating Hajj and Umrah wastes into energy and value-added products. A scientific forum on Environmental Issues & New Trends, held on 16 February, 2015 at King Abdulaziz University, Jeddah, Saudi Arabia (Invited Talk).
 16. AS Nizami, **M Rehan**. Waste biorefinery in Saudi Arabia; a way forward to a bio-based economy. The Royal Commission International Conference on Latest Technologies of Industrial Waste Recycle and Reuse, held in 3–4 December 2014, in Jubail Industrial City. Saudi Arabia (Invited Talk).
 17. AS Nizami, **M Rehan**. Saudi Arabian Waste biorefinery; from concept to production. First Scientific Forum in the Recycling of Municipal Solid Waste. The Center of excellence in Environmental Studies (CEES), King Abdulaziz University, Jeddah. 24-25 November, 2014 (Invited Talk).
 18. PM Martín-Soladana, X Lai, **M Rehan**, D York, N Granito, (July 2014). Control of physical properties of zinc carbonate particles by continuous precipitation, The 45th Annual BACG Conference, UK (Poster).
 19. J Gardy, A Hassanpour, X Lai, **M Rehan**. (May 2014). The influence of blending process on the quality of rapeseed oil-used cooking oil biodiesels, International Conference on Environment and Renewable Energy, France (Oral).
 20. X Lai, T Alhawi, **M Rehan**, D York. (May 2014). Hydrothermal synthesis and characterization of zinc carbonate nanoparticles, 7th World Congress on Particle Technology, China (Poster).
 21. X Lai, T Alhawi, **M Rehan**, D York. (May 2014). Synthesis, characterization and control of zinc carbonate nanoparticles via the microemulsion route, 7th World Congress on Particle Technology, China, (Poster).
 22. J Gardy, C Wosu, A Hassanpour, X Lai, **M Rehan** (Mar 2014). The impact of process parameters on biodiesel yield and improving the physicochemical properties of biodiesel fuel by pre-blending and post-blending, International Bioenergy Conference, UK (Poster).
 23. **M Rehan**, X Yu, X Lai. (Sep 2013). Synthesis and characterization of zinc carbonate nanoparticles by semi-batch and continuous crystallization processes, Inaugural Meeting for Leeds Crystallisation Centre, UK (Poster).
 24. **M Rehan**, T Al-Hawi, X Lai. (Sep 2013). Synthesis and characterization of zinc carbonate nanoparticles via the microemulsion route, Inaugural Meeting for Leeds Crystallisation Centre, UK (Poster).
 25. **M Rehan**, X Yu, X Lai, N Granito, G Wise, D Xu, LM Juan. (Aug 2013). ZnCO₃ crystallization in batch and continuous processes, Particle Processing Symposium, Proctor & Gamble, UK (Poster).
 26. S Witharana, **M Rehan**, H Chen, Y Ding. (Aug 2010). Stability and thermophysical properties of alumina nanofluids, Nanofluids: Fundamentals & Applications II, Canada (Poster).
 27. M Barber, X Lai, DR Merrifield, V Ramachandran, **M Rehan**, KJ Roberts, S Witharana. (May 2010).

Investigation of chemical processes using synchrotron radiation techniques, University of Leeds, UK (Poster).

28. **M Rehan**, X Lai, GM Kale. (Apr 2009). An in situ kinetic study of the hydrothermal synthesis of TiO₂ nanoparticles using synchrotron radiation ED-XRD, The International Conference For NanoTechnology Industries, Riyadh, Saudi Arabia (Oral).
29. **M Rehan**, X Lai, GM Kale. (Sept 2008). In situ investigation of hydrothermal synthesis of TiO₂ nanoparticles using synchrotron radiation x-ray diffraction, the 17th International Symposium on Industrial Crystallization, The Netherlands (Oral and Poster).
30. **M Rehan**, X Lai, GM Kale. (Jun 2008). In-situ synchrotron study of hydrothermal synthesis of TiO₂ nanoparticles, 9th UK Particle Technology Forum, UK (Poster).
31. **M Rehan**, X Lai, GM Kale. (Feb 2008), In situ investigation of hydrothermal synthesis of TiO₂ nanoparticles using synchrotron radiation XRD, Nanoparticles Conference, UK (Poster).

Community Services

- **National and International Reviewer, Trainer, and Speaker**

Community services as a (a) Reviewer and Auditor for research grant projects applied to King Abdulaziz City of Science and Technology (KACST) under the National Science, Technology and Innovation Plan (NSTIP) and General Programs, (b) Reviewer for The National Research Foundation of South Africa (NRF) for research grant proposals, (c) Auditor of project reports made for different governmental institutions, (d) Trainer for talented students of Saudi Arabian schools under national 'Mawhiba' program, and (e) Public and invited speaker at various national and international forums as environmental and renewable energy activist.

- **International Advisory and Scientific Board Member**

Community services as an advisory and scientific board member for (a) selecting and nominating outstanding speakers for many national and international conferences/events/workshops through the platform of Fleming Gulf and Nispana Innovative Groups, (b) reviewing and advising many international renewable energy-related conferences like NAXOS2018 (6th International Conference on Sustainable Solid Waste Management) 13-16 June 2018, Greece; BWR2018 (3rd International Conference on Biological Waste as Resource) 17-19 December, Hong Kong; IEREK scientific committee; Renewable Energy Sources - Research and Business (RESRB) Conference, Wroclaw, Poland, 2016 & 2017; World Renewable Energy Congress, 2011; BE2011 (Sweden Bioenergy Technology Conference, 8-11 May 2011, Linköping, Sweden).

- **Freelance Writer in Electronic and Printed Media**

Community services as a writer in Newspapers such as Arab News, Saudi Gazette, and Makkah-Al-Mukarrmah, and magazines like Forbes Magazine, and EnviroCities, and most read Blogs in Middle East countries such as EcoMENA and BioEnergy Consult to highlight local environmental issues with their eco-friendly and sustainable solutions.

Affiliation with Scientific Journals and Research Institutions

- **Invited Reviewer by Elsevier** for (Applied Energy, Arabian Journal of Chemistry, Bioresource Technology Reports, Energy, Energy Conversion and Management, Fuel Processing Technology, International Biodeterioration & Biodegradation, Journal of Analytical and Applied Pyrolysis, Journal of Cleaner Production, Journal of Environmental Management, Journal of Luminescence, Renewable & Sustainable Energy Reviews, Science of the Total Environment, Thermal Science and Engineering Progress, Waste Management)
- **Invited Reviewer by American Chemical Society (ACS)** for (Energy and Fuels, Industrial & Engineering Chemistry Research)
- **Invited Reviewer by Royal Society of Chemistry (RSC)** for (CrystEngComm, New Journal of Chemistry)
- **Invited Reviewer by SAGE** for (Energy and Environment)
- **Invited Reviewer by Frontiers** for (Frontiers in Energy Research, Frontiers in Bioengineering and

Biotechnology

- **Invited Reviewer by MDPI** (Sustainability)
- **Invited Reviewer by KACST** (Research grant proposals/reports of up to 2,000,000 SAR)
- **The National Research Foundation of South Africa (NRF)** (Invited as a reviewer to evaluate the quality of research outputs of academic and research staff. Also to provide recommendations for the future development of research).

Awards and Honours

- Most cited Research Topic (Waste biorefineries: future energy, green products and waste treatment) Award in *Frontiers in Energy Research Journal*.
- Certified Publons Academy Mentor (Nov 2019 – present).
- Top Reviewer Award for Engineering, Publons Peer Review Awards 2019.
- Top Reviewer Award for Cross field, Publons Peer Review Awards 2019.
- Best Researcher Award at CEES, KAU (2018).
- Eight research projects approved/ funded by Ministry of Education, Saudi Arabia (2015-2019).
- Two research projects approved by NSTIP-KACST, Saudi Arabia (2016).
- Top ISI Cited Journals' awards by Deanship of Scientific Research (DSR) at King Abdulaziz University, Saudi Arabia (2018, 2019).
- Citation awards' by Deanship of Scientific Research (DSR) at King Abdulaziz University, Saudi Arabia (2018, 2019).
- Ranking on the top 0.1% of scientists in the world on Academia.edu website.
- ResearchGate score (44.02) is higher than 97.5% of ResearchGate members.
- Top Reviewer Award for Engineering, Publons Peer Review Awards 2018.
- Top Reviewer Award for Social Science and General, Publons Peer Review Awards 2018.
- Highly cited paper, 'Effect of plastic waste types on pyrolysis liquid oil,' in the top 1% of the academic field of Environment/Ecology, Web of Science.
- Highly cited paper, 'Microbial electrolysis cells for hydrogen production and urban wastewater treatment: A case study of Saudi Arabia,' in the top 1% of the academic field of Engineering, Web of Science.
- Highly cited paper, 'Catalytic pyrolysis of plastic waste: A review, in the top 1% of the academic field of Environment/Ecology, Web of Science.
- Highly cited paper, 'Waste to energy potential: a case study of Saudi Arabia,' in the top 1% of the academic field of Engineering, Web of Science.
- Highly cited paper, 'Developing waste biorefinery in Makkah: A way forward to convert urban waste into renewable energy,' in the top 1% of the academic field of Engineering, Web of Science.
- Highly cited paper, 'The potential of Saudi Arabian natural zeolites in energy recovery technologies,' in the top 1% of the academic field of Engineering, Web of Science.
- Most cited and downloaded paper, 'Effect of plastic waste types on pyrolysis liquid oil' in *International Biodeterioration & Biodegradation* (Elsevier), April 2017-Present.
- Outstanding Reviewer Award for Elsevier Journals *Energy, Renewable and Sustainable Energy Reviews, Energy Conversion and Management, Journal of Cleaner Production and Applied Energy Journal* (2017-Present)
- Most cited and downloaded paper, 'Catalytic pyrolysis of plastic waste: a review' in *Process Safety and Environmental Protection* (Elsevier), July 2016-Present.
- Most downloaded paper, 'Influence of temperature and reaction time on the conversion of polystyrene waste to pyrolysis liquid oil' in *Waste Management* (Elsevier), (2017).
- EPSRC Scholarship Postgraduate Award, University of Leeds, UK (PhD, 2007-2011).
- Awarded 'Office Management Champion' title by the head of department at University of Leeds, UK (2011).
- Messel and Brian Scarlett travel grants to attend international conferences (2008-2009).
- Finalist in the oral presentation competition, University of Leeds, UK (2008).
- Best poster award (4th prize) at Festival of Research and Public Engagement, University of Leeds,

UK (2008).

Conferences and Workshops Organized

- Scientific Committee Member: 8th International Conference on Sustainable Solid Waste Management, 17-20 June 2020, Thessaloniki, Greece.
- International Conference on Mechanical Engineering (ICME 2020), Scientific Committee Member, 29-30 Jan 2020, Pakistan.
- Participated in teaching/ special training program to prepare the Environmental officers and graduates at Saudi Presidency of Meteorology and Environment for Masters Courses in UK, 2017 & 2018.
- Organized and invited presenter: Air Pollution Workshop, held in CEES, KAU 21 February 2016.
- Organizing and Scientific Committee Member: First Scientific Forum in the Recycling of Municipal Solid Waste held in CEES, KAU 24-25 November 2014.

Memberships

- Associate Member of IChemE (UK)
- Associate Member of Institute of Nanotechnology (UK)

Participations in Scientific Conferences, Workshops and Short Courses

- Attended 'ISESCO-KAU International Symposium on Nanotechnology for Environmental Applications' King Abdulaziz University (20-22 Dec 2015).
- Participated in Workshop 'Role of extremophiles on biodegradation of petroleum hydrocarbons' CEES, King Abdulaziz University (2 Dec 2015).
- Participated in Scientific workshop 'Bioremediation of petroleum hydrocarbons under extreme conditions' CEES, King Abdulaziz University (24-25 Nov 2014).
- Participated in First Scientific Forum in the Recycling of Municipal Solid Waste CEES, King Abdulaziz University (31 Mar – 1 April 2015).
- Effective Research Student Supervision in Science, Engineering and Medically-Related Disciplines, training taken at University of Leeds, UK (2 Jul 2013).
- Leading & Managing in the New Academic Environment (Modules: (1) Building and Developing a Positive Team Environment (12 April 2013), (2) Priority & Time Management) (24 May 2013).
- Health & Safety: The Role of the Manager, training at University of Leeds, UK (17 June 2013).
- Impact of Nanotechnology on Environmental Health (workshop), UK, Dec 2012.
- Attended Molecules to Particles Symposium, UK, Jan 2008.
- Attended UK-China Particle Technology Forum Conference, UK, April 2007.
- Attended Pharmaceutical Product Formulation and Pharmaceutical Analytical Techniques (MSc modules at University of Leeds, UK, 2007).
- Level 2 award in Health & Safety in the work place, 3 days course at University of Leeds, UK (IOSH, Mar 2007).
- Chemistry for Chemical Engineers course (IChemE), University of Leeds, UK (4-6 Sep 2007).
- Also attended comprehensive courses on Communication Skills, Presentation Skills, Effective Research Writing, Research Ethics, Networking, Project Management, Preparing Research Proposals, at University of Leeds, UK during 2007 - 2012.

Research and Analytical Skills

- Leading role in establishing and managing the Solid Waste Group/ Energy and Fuels Laboratories at CEES, KAU.
- Leading role in establishing and operating state of the art laboratory at CEES including small pilot scale pyrolysis process, fuel characterization tools such as bomb calorimetry analysis, flash point, viscosity, moisture, pour point, multi meters, biogas analyser, ovens, furnaces etc.

- Designed and fabricated an integrated air pollution monitoring station at CEES with range of meteorological data sensors and Horiba gas analyzers including NO_x, SO₂, O₃, CO and THC.
- Set-up, commissioned and operation of a small pilot scale pyrolysis process
- Synthesis and characterization of nanoparticles by various techniques
- XRD & ED-XRD (Synchrotron Radiation)
- SEM & TEM (SAED, EDS, HR-TEM)
- Indoor and outdoor air sampling and analysis
- GC-MS, HPLC, FT-IR, ICP-MS, UV-Vis, AAS
- Thermal Analysis (TGA/DTA/DSC)
- Mastersizer & Zetasizer Nano
- Experience in various other chemical synthesis, analysis, materials characterization techniques

Computer Skills

- Microsoft Office Programs (Achieved ECDL certification at Level 2)
- Computer Aided Design 2D & 3D (Achieved City and Guilds certifications at Level 2 & 3)
- HighScore Plus and Polycrystal (XRD data analysis)
- Digital Micrograph (crystal structure, size and morphology analysis of SEM and TEM images)
- Pincer (in situ EDXRD data acquisition and analysis)
- Working knowledge of Origin and other mathematical programs
- Experience in using many other technical, operational and data analysis software

Established collaboration with International Institutions

Published joint articles with all the listed Institutions

- **USA** (South Dakota State University, University of Arkansas, University of Illinois)
- **UK** (University of Glasgow, Leeds University, De Montfort University, University of Bradford, University of Ulster, Newcastle University, Aston University)
- **Canada** (University of Western Ontario, London)
- **Belgium** (University of Antwerp, Flemish Institute for Technological Research (VITO), Aristotle University of Thessaloniki)
- **China** (Chinese Academy of Sciences, East China University of Science and Technology, Donghua University, Jiangnan University)
- **KSA** (Umm-Al Qura University, Prince Mohamed Bin Fahd University, King Khalid University)
- **Sweden** (Karlstad University, Malardalen University, Royal Institute of Technology)
- **Australia** (Macquarie University, RMIT University)
- **Ireland** (University College Cork)
- **Hungary** (University of Pannonia)
- **Pakistan** (National University of Science and Technology, University of the Punjab, Quaid-i-Azam University, University of Gujrat, COMSATS Institute of Information Technology, University of Engineering and Technology, National Centre for Physics, University of Sindh, Government College University Lahore, University of Peshawar)
- **Spain** (Polytechnic University Catalonia)
- **Austria** (Graz University of Technology)
- **Netherlands** (Netherlands Enterprise Agency,
- **Italy** (Italian National Agency for New Technologies)
- **Brazil** (Federal University of Vicosa)

- **Malaysia** (Universiti Teknologi PETRONAS, University Putra Malaysia, Universiti Teknologi Malaysia, Universiti Teknologi MARA)
- **Greece** (National Technical University of Athens)
- **Egypt** (Cairo University, National research Centre, Central metallurgical R& D Institute)
- **Jordon** (Jordon University of Science and Technology)
- **Indonesia** (Janabadra University, Gadjah Mada University)