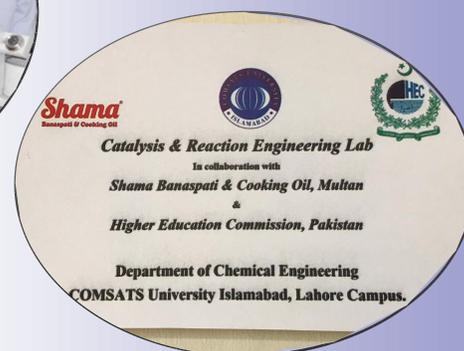


# NEWSLETTER



## DEPARTMENT OF CHEMICAL ENGINEERING



**FALL 2019 - FALL 2020**



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## Message From Director



By the grace of Allah Almighty! Traversing through a journey by a passionate commitment to excellence, COMSATS University Islamabad (CUI), Lahore Campus has evolved into one of the flagship campuses of CUI. Its success story spread over a decade is matter of deep pride and honor for all those associated with this prestigious seat of higher education and quality research in emerging technologies. Our esteemed institution caters to the pragmatic, practical and moral aspects of learners with the strong realization to make its alumni a functional part of society.

By taking advantage of their newly acquired skill set and quality learning, our undergraduates and graduates as independent and critical thinkers have stood up to local and international challenges and acclaimed awards in nearly all walks of life. I believe that the need based, research oriented, solution based and innovative teaching-learning ambiance created here is a way forward for our education system that needs to bridge up the gap between the theory and the practice, address the societal demands, and reclaim its recognizable space in the comity of academia. I hope that the symbiotic relationship between the teacher and the taught, the administration and the academia will lead our institution to the new heights of fame and glory. I, as a Director, look forward to the opportunity to provide you with this enriching teaching-learning experience. I compliment Department of Chemical Engineering on publishing this newsletter and look forward to increase success of this endeavor in the coming months.

PROF. DR. SYED ASAD HUSSAIN  
Director CUI, Lahore Campus

## Message From Dean

Engineering at COMSATS University Islamabad (CUI) offers unique opportunities for innovative education and research. At CUI, engineering education was initiated in 1999 with single discipline and now, after more than fourteen years, engineering has grown beyond expectations. It has been consistently ranked among top engineering faculties of Pakistan. When it comes to career development and planning, students at COMSATS University are supported by our career development centres and industrial liaison offices at different campuses. These arrangements reflect CUI's commitment, enabling all of our students to access the maximum possible range of career opportunities in engineering sectors.



**Prof. Dr. Muhammad Abid**

Dean of Engineering

## Greetings From HOD/Chairman

Dear friends and alumni of COMSATS University Islamabad (CUI), greetings from Department of Chemical Engineering. I hope this latest edition of the *newsletter* finds you well and happy. I have made changes driven by the question. "How do we ensure our students have the skills and professional opportunities to succeed in this hypercompetitive world?" We have aggressively focused on curriculum reform and infrastructure investment resulting transformational infusion of new instrumentation in many laboratories. Research infrastructure is expanding with the founding of many research groups and induction of expert faculty that broadly supports department and institute activities. I am confident Chemical Engineering Department is on track to produce future graduates.



**Dr. Murid Hussain**

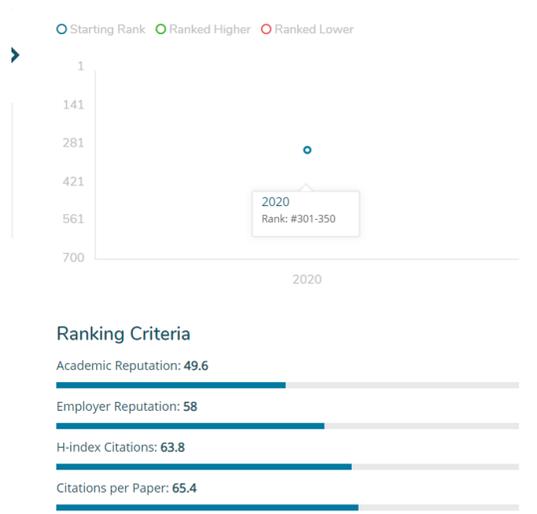
HOD/Chairman

## Academic Achievements

### Chemical Engineering @ CUI Ranked # 1 in Pakistan

According to the QS Rankings 2020, COMSATS University Islamabad is Ranked # 1 in the field of Chemical Engineering (301-350 in World). It is indeed a proud moment for the Department of Chemical Engineering @ CUI Lahore Campus. It shows our academic standards being maintained and quality of our graduates. The department is further committed to hold this title for upcoming years and further improve international ranking of both the department and the university

# RANK	UNIVERSITY	LOCATION	COMPARE	STARS™
2020	University search	Pakistan		Rated only
301-350	COMSATS University Islamabad <a href="#">More</a>	Pakistan	<input type="checkbox"/>	
301-350	National University of Sciences And Technology (NUST) Islamabad <a href="#">More</a>	Pakistan	<input type="checkbox"/>	



### Transformation from Classroom teaching to Online Teaching

In response to the prevailing COVID-19 pandemic, CUI decided to shift from conventional classroom teaching to asynchronous mode of online teaching. The faculty and students at the department of chemical engineering embraced this paradigm shift with zest and zeal. Several committees were constituted at the departmental level to workout strategies and operating procedures for the smooth and effective transition. The subject resource persons and student advisors ensured that the teaching, learning and assessment experience is as close as possible to conventional classroom. The departmental faculty used innovative platforms to prepare quality lectures and to hold interaction sessions with students. The policy guidelines provided by the Pakistan Engineering Council were also adhered to by the department. As a result of these cohesive efforts by the departmental faculty, the overall student feedback has been quite positive.

## ACCREDITATION

### **"Three Year accreditation granted by Pakistan Engineering Council (PEC) to our BS Chemical Engineering program under Level-II (Washington Accord)"**

Pakistan Engineering Council (PEC) has granted accreditation to our BS Chemical Engineering program for a period of three years under Level-II (Washington Accord). This include intakes of Fall 2016-2018. Evidently, it's a great milestone achieved by the department and it was only possible due to the visionary leadership of Dr. Murid Hussain (Head & Chair), continuous efforts of highly qualified faculty and world class facilities provided by the institution. This will provide new opportunities to our graduates and remove barriers in their international mobility for higher studies and job across the world.

## POST GRADUATE FUNDING

### **World class post-graduate funding/research opportunity at Department of Chemical Engineering, CUI, under Erasmus Mundus Master in Chemical Innovation and Regulation (EMMC-ChIR) program.**

The Erasmus Mundus Master Course in Chemical Innovation and Regulation (EMMC-ChIR) - is an MSc degree program for professionals concerned with the safety and regulation of chemical substances. The program will provide the professionals with all the tools and knowledge needed from the scientific, the regulatory and the economic point of view to manage the risks of chemicals responsibly and to meet responsibilities over chemical legalization world wide. Under this program, students will take 1 year of classes in the Host University and perform one year research in another European University in a different country. Research can also be partially done in one of the non-EU partner universities in Brazil, China, USA, India or Japan, or in one of the 20 associate partner institutions including Department of Chemical Engineering, COMSATS University Islamabad- Lahore Campus. The project will receive 4.4 million euros in this edition to fund student grants (2021-2025). Erasmus Mundus Scholars from Pakistan will be welcomed to collaborate in the project and also, MSc students from across the world may receive funding to do research in collaboration with COMSATS. This is obviously a great news for our post-graduate students. This will not only provide new opportunities to our graduates but also remove barriers in their international mobility for funded and research oriented higher studies at top ranked international university.

## PUBLICATIONS CENTURY

### **"Department of Chemical Engineering, CUI Lahore crosses the barrier of 100 publications in a calendar year"**

It is a moment of pride for our students, faculty and CUI that Department of Chemical Engineering has achieved the milestone of 100 publications in a calendar year. Even when the pandemic of COVID-19 affected academic/research activities of varsities across the country, our dedicated graduate students under the supervision of faculty members worked really hard to achieve the already set goals for current year.

The department has been apprised by the Rector CUI, Director Campus and Dean of Engineering, and other senior officials of the university. The department is all set to provide excellent research environment to its post graduate students with multiple funded projects, well established research labs and highly qualified faculty members. We are looking forward to set new records for upcoming years Insha-ALLAH.



## INAUGURATION OF RESEARCH LAB

### Inauguration of Catalysis & Reaction Engineering Research Lab Developed under Academia- Industry Linkage

Academia-Industry linkage is very essential for technology development and considered as a key challenge in Pakistan. COM-SATS University Islamabad (CUI) has an active research culture and is ranked among the top Pakistani universities on all major international academic rankings. In this context, CUI-Lahore Campus is not only contributing for the national cause but also paving ways for other industrial organizations and universities to work together as a team for common interests..

According to the recent QS University Rankings, CUI is ranked # 1 in the field of Chemical Engineering in Pakistan (301-350 in world). Dr. Murid Husain (Principal Investigator, Head & Chairman/Chemical Engineering) won a Technology Development Fund (TDF) Project under Academia-Industry linkage, funded by Higher Education Commission (HEC), Pakistan and Shama Banaspati & Cooking Oil, Multan..

As part of the TDF project, to serve the national cause and to provide extensive research platform for fellow colleagues/students in the area of cleaning products developments and, catalysts development & their applications, Catalysis & Reaction Engineering Research Lab has been established under this linkage. Mr. Sh. Ahsan Rasheed, CEO/Vice-Chairman of Shama Banaspati & Cooking Oil and Dr. Tahir Naeem, Director CUI Lahore Campus inaugurated the research lab. The CEO/Vice-Chairman appreciated the PI and his team and mentioned that the deliverable of this joint collaboration gave birth to brand Wiz a house of cleaning products. The Director CUI-Lahore Campus appreciated the efforts of the project team of the Department of Chemical Engineering, the management and team of Shama Bansaspati & Cooking Oil and HEC Pakistan for this joint venture to develop and commercialize the products. He further added that the Department of Chemical Engineering and Shama Banaspati & Cooking Oil will further strengthen this collaboration of products development and commercialization for the national development.



## New Master programs from Fall 2020

The Department of Chemical Engineering is broadening its continuously horizon and is all set to launch its new Masters Program with specialization in Energy & Environmental Engineering. Higher Education Commission has granted NOC to launch this program, and admissions are expected to be offered from Fall 2020 onwards. The MS in Energy and Environmental Engineering program seeks to offer a wide spectrum of knowledge for effective utilization of energy for sustainable environment. It will enable students to apply various methodologies to move towards a sustainable, cleaner and energy efficient environment. This unique multi-disciplinary program will train the students not only in renewable energy technologies and its implementation but also in equally important areas of energy infrastructure, rational use of energy, energy and environmental policies, and energy-environment interface etc. Thus, the program enables the students to tackle practical problems of design, development, deployment in the industry, and to pursue academics as well as frontiers of research. The program envisages to invite national and international experts in the field and provide ample opportunity for students to interact and carve out suitable career options in their fields of interest. The Masters Degree of Energy and Environmental Engineering is focused on finding efficient, environmentally friendly and innovative ways to produce /supply energy. Graduates would be able work in a variety of roles focusing on supplying energy to meet the demand without emasculating environmental integrity and reduce the fossil fuel utilization rate.

## New Research Center/Lab Lunched Catalysis & Reaction Engineering Research Lab Developed under Academia-



## Research Buildup

**The undergraduate students of Chemical Engineering Department have successfully designed and fabricated 'Forward Osmosis Cell'**

The undergraduate students of Chemical Engineering Department have successfully designed and fabricated 'Forward Osmosis Cell' in the departmental laboratories. The group of students of 5th semester comprising of Mr. Zohaib, Mr. Hamza, Mr. Taimoor, Miss Abeera and Miss Sara completed the design and fabrication of the unit using indigenous resources. The unit will be used for the treatment of industrial waste water. Forward osmosis (FO) is an osmotic process that, like reverse osmosis (RO), uses a semi-permeable membrane to effect separation of water from dissolved solutes. The driving force for this separation is an osmotic pressure gradient, such that a "draw" solution of high concentration (relative to that of the feed solution), is used to induce a net flow of water through the membrane into the draw solution, thus effectively separating the feed water from its solutes. In contrast, the reverse osmosis process uses hydraulic pressure as the driving force for separation, which serves to counteract the osmotic pressure gradient that would otherwise favor water flux from the permeate to the feed. Hence significantly more energy is required for reverse osmosis compared to forward osmosis."





## GCRF RESEARCH GRANT

The researchers from Membrane Systems Research Group, Department of Chemical Engineering, COMSATS University Islamabad, Pakistan and Teeside University, UK won the prestigious ‘Global Challenges Research Fund’ worth 25,000 British Pounds for a period of two years. The grant will be used for the fabrication and application of membranes for energy and the environment.

**International Conference on Membrane Science & Technology (ICM 2020)**

The Membrane Systems Research Group at the Department of Chemical Engineering collaborated with the likeminded research groups under the platform of the Pakistan Membrane Society to organize International Conference on Membrane Science & Technology (ICM 2020). Due to the restrictions imposed by the COVID19 pandemic, the entire conference was organized virtually. It was a highly enriching and new kind of networking experience for the researchers that participated from around the globe.



A VIRTUAL CONFERENCE  
ON  
MEMBRANE SCIENCE & TECHNOLOGY

ICM 2020

JULY 20-22, 2020

REGISTER AT  
[WWW.PAKMEMBRANE.COM](http://WWW.PAKMEMBRANE.COM)

## Inter-Departmental Sports Gala

Sport develops a sense of friendliness among the children and develop their team spirit. It helps us to develop mental and physical toughness. Sport shapes the body and make it strong and active. Department of Chemical Engineering strongly encourages its students and staff to participate in sports activities.

Intra department sports gala held at campus in which teams from each batch actively participated in various games.



## Department Building Communities

### 1-Alumni Affairs and Achievements

Hamza Asmat- our brilliant graduate secured full central scholarship for PhD Chemical Engineering at MONASH University (Melbourne, Australia)

It is a moment of great pleasure and pride for our department that our graduates are leaving a powerful message among chemical engineering community across the globe by competing in academia, research and industry as well that we are best in Pakistan. Recently, one of our brilliant graduates Mr. Hamza Asmat (FA14-BEC-039) secured full central scholarship for PhD Chemical Engineering at MONASH University (Melbourne, Australia). It is important to mention that MONASH ranks 29th in the world generally and ranks 1st in Chemical Engineering in Australia. Mr. Hamza is really grateful to his department and CUI as a whole for all the support and extraordinary academic facilities. He is also thankful to his respected teachers for changing his dreams into reality that he is now a step close to his ideal career in academia/research. Department of Chemical Engineering is really proud of him and wish him luck for future endeavors .

### 2-Internship and Placement Office

**Fall 19 students of chemical engineering visited “Fatima Fertilizer” at Sheikhpura Road.**

### 3-Student Counseling and Career Guidance

**The job placement cell arranged the on campus recruitment by “Style Textiles”. Total 10 graduates of chemical engineering department hired as a MTO’s (Management Trainee Officers).**



## Awards & Honors 2019-2020



- ⇒ **Dr. Asim Laeeq Khan is appointed as ‘Guest Editor’ of the Frontiers in Energy Research Journal and Journal of Membrane Science & Research.**
- ⇒ **Dr. Asim Laeeq Khan is elected in the ‘Executive Council’ of the Pakistan Membrane Society for a period of two years.**



- ⇒ **Dr. Awais Bokhari is appointed as an “Associate Editor” of Cleaner Engineering and Technology Journal by Elsevier.**
- ⇒ **Dr. Awais Bokhari is appointed as an “Associate Editor” of Journal of Cleaner Production, Elsevier.**
- ⇒ **Dr. Awais Bokhari is appointed as an “Editor” of Chemical Engineering Transactions, AIDIC, Italy.**
- ⇒ **Dr. Awais Bokhari is appointed as a ‘Guest Editor’ of the Frontiers in Energy Research Journal**
- ⇒ **Dr. Awais Bokhari appointed as an “Editor” of International Journal of Quality, Process, Performance**
- ⇒ **and Technology**

## PROGRAM EVALUATOR APPOINTMENTS



**Dr. Murid Huusain (HOD/Chairman) is now an approved 'Program Evaluator' for the accreditation of Chemical Engineering programs offered at Universities in Pakistan.**



**Dr. Asim Laeeq Khan (Associate HOD) is now an approved 'Program Evaluator' for the accreditation of Chemical Engineering programs offered at Universities in Pakistan.**



**Dr. Aqeel Ahmed Bazmi (Associate Professor) is now an approved 'Program Evaluator' for the accreditation of Chemical Engineering programs offered at Universities in Pakistan.**

## New to Department and Rejoining



After successful completion of his PhD from Korea Advanced Institute of Science and Technology (KAIST), South Korea, **Dr. Azeem Mushtaq** rejoined the Department of Chemical Engineering, CUI Lahore in March 2020. His PhD research work includes the development of novel electroactive membranes and their potential application in recovery of valuable organics from liquid mediums and wastewater treatment. During MS and PhD, Dr. Azeem published his research in eight SCI journals, 7 national and international conferences and he also has one international patent to his name. Dr. Azeem has an extensive teaching experience spanning over 6 years at university level education. Currently, Dr. Azeem is focused on solving water related issues by employing electroactive membranes for degradation of micro-pollutants found in wastewater and catalytic reduction of CO<sub>2</sub>.



**Dr. Nabeel Ahmad** received his bachelor degree and master degree in Chemical Engineering from University of the Punjab, Lahore, Pakistan in 2012 and 2014 respectively. He completed his Ph.D. degree in chemical engineering from University of Malaya (QS ranking 59) in 2019. During course of his Ph.D. studies he have published numerous ISI journal articles. His primary field of research interest is Renewable and sustainable energy which includes the coal, rubbers, plastics and biomass utilization for power and fuel production through gasification, pyrolysis and liquefaction processes. His research work blends the theoretical, simulation, and practical aspects.



### **Dr. Wajih ur Rehman**

Since rejoining, i am working in my area of Aerosol Technology. I am trying to procure instrument for myself (although it will take a long time i guess). Also i am working with Dr. Um-e-Salma and Dr. Moinuddin Ghauri on course coding for Food Engineering. Currently i am having a PhD student for course Chemicals emission and control for his weekly lectures. Working with Dr. Um-e-Salma and Hamood-ur-Rehman on course coding correction for MS in Energy and Environmental Engineering.

*Currently, more than 15 faculty members are studying abroad on ex-Pakistan study leave. They are studying in different countries all over the world in USA, UK, Australia, Korea, Malaysia, Europe and other countries. They are going to be a great addition in future building of students.*

## Promotions 2019-2020



**Engr. Muhammad Haris Hamayun** was appointed as Research Associate in August 2015 in Department of Chemical Engineering, CUI, Lahore. He was promoted to Lecturer in Feb 2020. He is an active team member of Departmental Research group "Catalysis and Reaction Engineering" under the leadership of Dr. Murid Hussain (HoD/chairman) and published two impact factor articles in the reputed journals.

He is an active team member of various departmental committee's i.e., Final year design project (FYDP), Continual Quality Improvement Cell (CQIC), and Batch advisor. He is currently pursuing PhD chemical engineering from Department of Chemical Engineering, UET, Lahore. His research interests include Process Modelling and Simulation, and Process Optimization



**Engr. Nasir Shehzad** was promoted to lecturer in year 2020. He also earned a PhD position in Sweden.

**Department:** Department of Engineering Science and Mathematics, Materials Science Division,

**University:** Lulea University of Technology (LTU), Lulea, Sweden

**Scholarship Detail:** I am working on a Project "Upgradation of Biogas". The objective of the research is to develop MOFs based catalyst for CO<sub>2</sub> Capture and Conversion into value-added chemicals. This is a joint project of LTU, UIO (Norway), and DTU (Denmark).

## Publications

During the Year 2019, faculty produced a large number of research publications, some of which were successful in securing place in high impact factor journals. Details of published research articles are given below:

1. Amjad, U.-E.-S., Sherin, L., Zafar, M.F., Mustafa, M. Comparative Study on the Catalytic Degradation of Methyl Orange by Silver Nanoparticles Synthesized by Solution Combustion and Green Synthesis Method (2019) Arabian Journal for Science and Engineering, 44 (12), pp. 9851-9857
2. 1) Amjad, U.-E.-S., Sherin, L., Zafar, M.F., Mustafa, M. Comparative Study on the Catalytic Degradation of Methyl Orange by Silver Nanoparticles Synthesized by Solution Combustion and Green Synthesis Method (2019) Arabian Journal for Science and Engineering, 44 (12), pp. 9851-9857
3. Yang, P., Tan, G.-Y.A., Aslam, M., Kim, J., Lee, P.-H. Metatranscriptomic evidence for classical and RuBisCO-mediated CO<sub>2</sub> reduction to methane facilitated by direct interspecies electron transfer in a methanogenic system (2019) Scientific Reports, 9 (1), art. no. 4116,
4. Shezad, N., Maafa, I.M., Johari, K., Hafeez, A., Akhter, P., Shabir, M., Raza, A., Anjum, H., Hussain, M., Tahir, M. Carbon nanotubes incorporated Z-Scheme assembly of agbr/tio<sub>2</sub> for photocatalytic hydrogen production under visible light irradiations (2019) Nanomaterials, 9 (12), art. no. 1767
5. Sajjad, Z., Gilani, M.A., Nizami, A.-S., Bilad, M.R., Khan, A.L. Development of novel hydrophilic ionic liquid membranes for the recovery of biobutanol through pervaporation (2019) Journal of Environmental Management, 251, art. no. 109618.
6. Rafiq, M.I., Farid, T., Zhou, J., Ali, A., Tang, J., Tang, W. Carbonized wood-supported hollow NiCo<sub>2</sub>S<sub>4</sub> eccentric spheres for high-performance hybrid supercapacitors (2019) Journal of Alloys and Compounds, 811, art. no. 151858,
7. Chaniago, Y.D., Hussain, A., Andika, R., Lee, M. Reactive Pressure-Swing Distillation toward Sustainable Process of Novel Continuous Ultra-High-Purity Electronic-Grade Propylene Glycol Monomethyl Ether Acetate Manufacture (2019) ACS Sustainable Chemistry and Engineering, 7 (22), pp. 18677-18689.
8. Fazal, T., Saif ur Rehman, M., Mushtaq, A., Hafeez, A., Javed, F., Aslam, M., Fatima, M., Faisal, A., Iqbal, J., Rehman, F., Farooq, R. Simultaneous production of bioelectricity and biogas from chicken droppings and dairy industry wastewater employing bioelectrochemical system (2019) Fuel, 256, art. no. 115902
9. Ahmad, N., Abnisa, F., Daud, W.M.A.W. Synthesis of liquid fuel through hydrothermal conversion of natural rubber (2019) AIP Conference Proceedings, 2168, art. no. 020058
10. Muhammad Imran, S., Kim, Y.A., Choa, Y.-H., Hussain, M., Yang, K.S. Pressure-sensitive polymer nanocomposites: Carbon nanofiber-reinforced MWCNT-coated PMMA microbeads (2019) Poly-

## Publications

- mer-Plastics Technology and Materials, 58 (16), pp. 1793-1801.
11. Tibi, F., Guo, J., Ahmad, R., Lim, M., Kim, M., Kim, J. Membrane distillation as post-treatment for anaerobic fluidized bed membrane bioreactor for organic and nitrogen removal (2019) *Chemosphere*, 234, pp. 756-762
12. Javed, F., Aslam, M., Rashid, N., Shamair, Z., Khan, A.L., Yasin, M., Fazal, T., Hafeez, A., Rehman, F., Rehman, M.S.U., Khan, Z., Iqbal, J., Bazmi, A.A. Microalgae-based biofuels, resource recovery and wastewater treatment: A pathway towards sustainable biorefinery (2019) *Fuel*, 255, art. no. 115826,
13. Haider, M.S., Shao, G., Ahmad, A., Imran, S.M., Abbas, N., Abbas, G., Hussain, M., Kim, H.T. Facile, single-pot preparation of nanoporous SiO<sub>2</sub> particles (carrier) with AgNPs at core and crust for controlled disinfectant release (2019) *Journal of Saudi Chemical Society*, 23 (7), pp. 828-835.
14. Khan, Z., Yusup, S., Aslam, M., Inayat, A., Shahbaz, M., Raza Naqvi, S., Farooq, R., Watson, I. NO and SO<sub>2</sub> emissions in palm kernel shell catalytic steam gasification with in-situ CO<sub>2</sub> adsorption for hydrogen production in a pilot-scale fluidized bed gasification system (2019) *Journal of Cleaner Production*, 236, art. no. 117636.
15. Wongso, V., Chen, C.J., Razzaq, A., Kamal, N.A., Sambudi, N.S. Hybrid kaolin/TiO<sub>2</sub> composite: Effect of urea addition towards an efficient photocatalyst for dye abatement under visible light irradiation (2019) *Applied Clay Science*, 180, art. no. 105158
16. Rehman, W.U., Merican, Z.M.A., Bhat, A.H., Hoe, B.G., Sulaimon, A.A., Akbarzadeh, O., Khan, M.S., Mukhtar, A., Saqib, S., Hameed, A., Mellon, N., Ullah, H., Ullah, S., Assiri, M.A. Synthesis, characterization, stability and thermal conductivity of multi-walled carbon nanotubes (MWCNTs) and eco-friendly jatropha seed oil based nanofluid: An experimental investigation and modeling approach (2019) *Journal of Molecular Liquids*, 293, art. no. 111534,
17. Tahir, K., Miran, W., Nawaz, M., Jang, J., Shahzad, A., Moztahida, M., Kim, B., Azam, M., Jeong, S.E., Jeon, C.O., Lim, S.-R., Lee, D.S. Investigating the role of anodic potential in the biodegradation of carbamazepine in bioelectrochemical systems (2019) *Science of the Total Environment*, 688, pp. 56-64
18. Atabani, A.E., Al-Muhtaseb, A.H., Kumar, G., Saratale, G.D., Aslam, M., Khan, H.A., Said, Z., Mahmoud, E. Valorization of spent coffee grounds into biofuels and value-added products: Pathway towards integrated bio-refinery (2019) *Fuel*, 254, art. no. 115640,
19. Rashid, N., Nayak, M., Lee, B., Chang, Y.-K. Efficient microalgae harvesting mediated by polysaccharides interaction with residual calcium and phosphate in the growth medium (2019) *Journal of Cleaner Production*, 234, pp. 150-156

## Publications

20. Hussain, A., Chaniago, Y.D., Riaz, A., Lee, M. Design method for the feasibility and technical evaluation of side-reactor column configurations (2019) *Chemical Engineering and Processing - Process Intensification*, 144, art. no. 107648,
21. Ahmad, N., Javed, F., Awan, J.A., Ali, S., Fazal, T., Hafeez, A., Aslam, R., Rashid, N., Rehman, M.S.U., Zimmerman, W.B., Rehman, F. Biodiesel production intensification through microbubble mediated esterification (2019) *Fuel*, 253, pp. 25-31
22. Hassan, M., Faisal, A., Ali, I., Bhatti, M.M., Yousaf, M. Effects of Cu–Ag hybrid nanoparticles on the momentum and thermal boundary layer flow over the wedge (2019) *Proceedings of the Institution of Mechanical Engineers, Part E: Journal of Process Mechanical Engineering*, 233 (5), pp. 1128-1136.
23. Abbas, T., Wadhawan, T., Khan, A., McEvoy, J., Khan, E. Iron turning waste media for treating Endosulfan and Heptachlor contaminated water (2019) *Science of the Total Environment*, 685, pp. 124-133.
24. Majeed, K., Ahmed, A., Abu Bakar, M.S., Mahlia, T.M.I., Saba, N., Hassan, A., Jawaid, M., Hussain, M., Iqbal, J., Ali, Z. Mechanical and thermal properties of montmorillonite-reinforced polypropylene/rice husk hybrid nanocomposites (2019) *Polymers*, 11 (10), art. no. 1557
25. Bencheikh, K., Atabani, A.E., Shobana, S., Mohammed, M.N., Uğuz, G., Arpa, O., Kumar, G., Ayanoğlu, A., Bokhari, A. Fuels properties, characterizations and engine and emission performance analyses of ternary waste cooking oil biodiesel–diesel–propanol blends (2019) *Sustainable Energy Technologies and Assessments*, 35, pp. 321-334.
26. Tahir, Z., Aslam, M., Gilani, M.A., Bilad, M.R., Anjum, M.W., Zhu, L.-P., Khan, A.L. –SO<sub>3</sub>H functionalized UiO-66 nanocrystals in Polysulfone based mixed matrix membranes: Synthesis and application for efficient CO<sub>2</sub> capture (2019) *Separation and Purification Technology*, 224, pp. 524-533.
27. Ullah, S., Assiri, M.A., Al-Sehemi, A.G., Bustam, M.A., Abdul Mannan, H., Abdulkareem, F.A., Irfan, A., Saqib, S. High-temperature CO<sub>2</sub> removal from CH<sub>4</sub> using silica membrane: experimental and neural network modeling (2019) *Greenhouse Gases: Science and Technology*, 9 (5), pp. 1010-1026.
28. Barambu, N.U., Bilad, M.R., Wibisono, Y., Jaafar, J., Mahlia, T.M.I., Khan, A.L. Membrane surface patterning as a fouling mitigation strategy in liquid filtration: A review (2019) *Polymers*, 11 (10), art. no. 1687.
29. Bhutto, A.W., Bazmi, A.A., Karim, S., Abro, R., Mazari, S.A., Nizamuddin, S. Promoting sustainability of use of biomass as energy resource: Pakistan's perspective (2019) *Environmental Science and Pollution Research*, 26 (29), pp. 29606-29619.
30. Ahmad, R., Guo, J., Kim, J. Structural characteristics of hazardous organic dyes and relationship between membrane fouling and organic removal

## Publications

- efficiency in fluidized ceramic membrane reactor (2019) *Journal of Cleaner Production*, 232, pp. 608-616.
31. Rashid, N., Ryu, A.J., Jeong, K.J., Lee, B., Chang, Y.-K. Co-cultivation of two freshwater microalgae species to improve biomass productivity and biodiesel production (2019) *Energy Conversion and Management*, 196, pp. 640-648.
32. Amjad, U.-E.-S., Quintero, C.W.M., Ercolino, G., Italiano, C., Vita, A., Specchia, S. Methane Steam Reforming on the Pt/CeO<sub>2</sub> Catalyst: Effect of Daily Start-Up and Shut-Down on Long-Term Stability of the Catalyst (2019) *Industrial and Engineering Chemistry Research*, 58 (36), pp. 16395-16406
33. Azam, M.U., Tahir, M., Umer, M., Tahir, B., Shehzad, N., Siraj, M. In-situ synthesis of TiO<sub>2</sub>/La<sub>2</sub>O<sub>3</sub>/CO<sub>3</sub>/rGO composite under acidic/basic treatment with La<sup>3+</sup>/Ti<sup>3+</sup> as mediators for boosting photocatalytic H<sub>2</sub> evolution (2019) *International Journal of Hydrogen Energy*, 44 (42), pp. 23669-23688.
34. Yasin, M., Jang, N., Lee, M., Kang, H., Aslam, M., Bazmi, A.A., Chang, I.S. Bioreactors, gas delivery systems and supporting technologies for microbial synthesis gas conversion process (2019) *Bioresource Technology Reports*, 7, art. no. 100207
35. Manzoor, T., Javed, T., Mustafa, G., Manzoor Ahmed, H.U., Razzaq, A. Facile synthesis of Cu<sub>x</sub>Zn<sub>1-x</sub>Fe<sub>2</sub>O<sub>4</sub> nanoparticles and their thermophysical properties evaluation (2019) *Applied Physics A: Materials Science and Processing*, 125 (9), art. no. 626
36. Zhao, J., Wang, L., Tang, L., Ren, R., You, W., Farooq, R., Wang, Z., Zhang, Y. Changes in bacterial community structure and humic acid composition in response to enhanced extracellular electron transfer process in coastal sediment (2019) *Archives of Microbiology*, 201 (7), pp. 897-906
37. Rashid, N., Nayak, M., Suh, W.I., Lee, B., Chang, Y.-K. Efficient microalgae removal from aqueous medium through auto-flocculation: investigating growth-dependent role of organic matter (2019) *Environmental Science and Pollution Research*, 26 (26), pp. 27396-27406
38. Ali, S., Razzaq, A., In, S.-I. Development of graphene based photocatalysts for CO<sub>2</sub> reduction to C<sub>1</sub> chemicals: A brief overview (2019) *Catalysis Today*, 335, pp. 39-54.
39. Ali, S., Flores, M.C., Razzaq, A., Sorcar, S., Hiragond, C.B., Kim, H.R., Park, Y.H., Hwang, Y., Kim, H.S., Kim, H., Gong, E.H., Lee, J., Kim, D., In, S.-I. Gas phase photocatalytic CO<sub>2</sub> reduction, "a brief overview for benchmarking" (2019) *Catalysts*, 9 (9), art. no. 727
40. Tahir, M., Tahir, B., Nawawi, M.G.M., Hussain, M., Muhammad, A. Cu-NPs embedded 1D/2D CNTs/pCN heterojunction composite towards enhanced and continuous photocatalytic CO<sub>2</sub> reduction to fuels (2019) *Applied Surface Science*, 485, pp. 450-461.

## Publications

41. Ali, S., Rani, A.M.A., Mufti, R.A., Azam, F.I., Hastuty, S., Baig, Z., Hussain, M., Shehzad, N. The influence of nitrogen absorption on microstructure, properties and cytotoxicity assessment of 316L stainless steel alloy reinforced with boron and niobium (2019) *Processes*, 7 (8), art. no. 506, pp. 1-12
42. Shafiq, I., Hussain, M., Shehzad, N., Maafa, I.M., Akhter, P., Amjad, U.-E.-S., Shafique, S., Razzaq, A., Yang, W., Tahir, M., Russo, N. The effect of crystal facets and induced porosity on the performance of monoclinic BiVO<sub>4</sub> for the enhanced visible-light driven photocatalytic abatement of methylene blue (2019) *Journal of Environmental Chemical Engineering*, 7 (4), art. no. 103265
43. Hamayun, M.H., Hussain, M., Maafa, I.M., Aslam, R. Integration of hydrogenation and dehydrogenation system for hydrogen storage and electricity generation – simulation study (2019) *International Journal of Hydrogen Energy*, 44 (36), pp. 20213-20222.
44. Hamid, A., Saleem, W., Yaqub, G., Ghauri, M.U.D. Comparative assessment of respiratory and other occupational health effects among elementary workers (2019) *International Journal of Occupational Safety and Ergonomics*, 25 (3), pp. 394-401.
45. Ali, S., Rani, A.M.A., Mufti, R.A., Hastuty, S., Hussain, M., Shehzad, N., Baig, Z., Aliyu, A.A.A. An efficient approach for nitrogen diffusion and surface nitriding of boron-titanium modified stainless steel alloy for biomedical applications (2019) *Metals*, 9 (7), art. no. 755,
46. Boulal, A., Atabani, A.E., Mohammed, M.N., Khelafi, M., Uguz, G., Shobana, S., Bokhari, A., Kumar, G. Integrated valorization of *Moringa oleifera* and waste *Phoenix dactylifera* L. dates as potential feedstocks for biofuels production from Algerian Sahara: An experimental perspective (2019) *Biocatalysis and Agricultural Biotechnology*, 20, art. no. 101234,
47. Maaz, M., Yasin, M., Aslam, M., Kumar, G., Atabani, A.E., Idrees, M., Anjum, F., Jamil, F., Ahmad, R., Khan, A.L., Lesage, G., Heran, M., Kim, J. Anaerobic membrane bioreactors for wastewater treatment: Novel configurations, fouling control and energy considerations (2019) *Bioresource Technology*, 283, pp. 358-372.
48. Lau, A.K.S., Bilad, M.R., Osman, N.B., Marbelia, L., Putra, Z.A., Nordin, N.A.H.M., Wirzal, M.D.H., Jaafar, J., Khan, A.L. Sequencing batch membrane photobioreactor for simultaneous cultivation of aquaculture feed and polishing of real secondary effluent (2019) *Journal of Water Process Engineering*, 29, art. no. 100779,
49. Ayaz, M., Muhammad, A., Younas, M., Khan, A.L., Rezakazemi, M. Enhanced Water Flux by Fabrication of Polysulfone/Alumina Nanocomposite Membrane for Copper(II) Removal (2019) *Macromolecular Research*, 27 (6), pp. 565-571
50. Reza, M.S., Ahmed, A., Caesarendra, W., Abu Bakar, M.S., Shams, S., Saidur, R., Aslfattahi, N.,

## Publications

- Azad, A.K. *Acacia holosericea*: An invasive species for bio-char, bio-oil, and biogas production (2019) *Bioengineering*, 6 (2), art. no. 33,
51. Ali, D., Butt, M.Z., Muneer, I., Farrukh, M.A., Aftab, M., Saleem, M., Bashir, F., Khan, A.U. Synthesis and characterization of sol-gel derived La and Sm doped ZnO thin films: A solar light photo catalyst for methylene blue (2019) *Thin Solid Films*, 679, pp. 86-98.
52. Atabani, A.E., Shobana, S., Mohammed, M.N., Uğuz, G., Kumar, G., Arvindnarayan, S., Aslam, M., Al-Muhtaseb, A.H. Integrated valorization of waste cooking oil and spent coffee grounds for biodiesel production: Blending with higher alcohols, FT-IR, TGA, DSC and NMR characterizations (2019) *Fuel*, 244, pp. 419-430
53. Faisal, A., Holmlund, M., Ginesy, M., Holmgren, A., Enman, J., Hedlund, J., Grahn, M. Recovery of L-Arginine from Model Solutions and Fermentation Broth Using Zeolite-Y Adsorbent (2019) *ACS Sustainable Chemistry and Engineering*, 7 (9), pp. 8900-8907
54. Khalid, A., Aslam, M., Qyyum, M.A., Faisal, A., Khan, A.L., Ahmed, F., Lee, M., Kim, J., Jang, N., Chang, I.S., Bazmi, A.A., Yasin, M. Membrane separation processes for dehydration of bioethanol from fermentation broths: Recent developments, challenges, and prospects (2019) *Renewable and Sustainable Energy Reviews*, 105, pp. 427-443
55. Ahmad, N., Abnisa, F., Wan Daud, W.M.A. Synthesis of valuable intermediate products from natural rubber under supercritical alcohol conditions (2019) *Journal of Analytical and Applied Pyrolysis*, 139, pp. 196-204.
56. Razzaq, A., In, S.-I. TiO<sub>2</sub> based nanostructures for photocatalytic CO<sub>2</sub> conversion to valuable chemicals (2019) *Micromachines*, 10 (5), art. no. 326,
57. Rashid, Z., Wilfred, C.D., Gnanasundaram, N., Arunagiri, A., Murugesan, T. A comprehensive review on the recent advances on the petroleum asphaltene aggregation (2019) *Journal of Petroleum Science and Engineering*, 176, pp. 249-268.
58. Rashid, N., Lee, B., Chang, Y.-K. Recent trends in microalgae research for sustainable energy production and biorefinery applications (2019) *Microalgae Biotechnology for Development of Biofuel and Wastewater Treatment*, pp. 3-20
59. Hussain, A., Chaniago, Y.D., Riaz, A., Lee, M. Significance of operating pressure on process intensification in a distillation with side-reactor configuration (2019) *Separation and Purification Technology*, 213, pp. 533-544.
60. Javed, F., Shamair, Z., Ali, S., Ahmad, N., Hafeez, A., Fazal, T., Saif Ur Rehman, M., Zimmerman, W.B., Rehman, F. "pushing and pulling" the equilibrium through bubble mediated reactive separation for ethyl acetate production (2019) *Reaction Chemistry and Engineering*, 4 (4), pp. 705-714.
61. Ahmad, R., Kim, J.K., Kim, J.H., Kim, J. Diethylene glycol-assisted organized TiO<sub>2</sub> nanostructures for photocatalytic wastewater treatment ceramic

## Publications

- membranes (2019) *Water* (Switzerland), 11 (4), art. no. 750,
62. Naseer, A., Jamshaid, A., Hamid, A., Muhammad, N., Ghauri, M., Iqbal, J., Rafiq, S., Khuram, S., Shah, N.S. Lignin and lignin based materials for the removal of heavy metals from waste water - An overview (2019) *Zeitschrift fur Physikalische Chemie*, 233 (3), pp. 315-345.
63. Ullah, Z., Bustam, M.A., Man, Z., Khan, A.S., Sarwono, A., Muhammad, N., Farooq, M., Shah, S.N., Ahmad, P., Haider, S. Phosphonium-based hydrophobic ionic liquids with fluorosulfonate anions for biodiesel production from waste cooking oil (2019) *International Journal of Environmental Science and Technology*, 16 (3), pp. 1269-1276.
64. Shahbaz, M., Taqvi, S.A., Minh Loy, A.C., Inayat, A., Uddin, F., Bokhari, A., Naqvi, S.R. Artificial neural network approach for the steam gasification of palm oil waste using bottom ash and CaO (2019) *Renewable Energy*, 132, pp. 243-254.
65. Tabriz, A., Ur Rehman Alvi, M.A., Khan Niazi, M.B., Batool, M., Bhatti, M.F., Khan, A.L., Khan, A.U., Jamil, T., Ahmad, N.M. Quaternized trimethyl functionalized chitosan based antifungal membranes for drinking water treatment (2019) *Carbohydrate Polymers*, 207, pp. 17-25
66. Tan, M., Ma, L., Rehman, M.S.U., Ahmed, M.A., Sajid, M., Xu, X., Sun, Y., Cui, P., Xu, J. Screening of acidic and alkaline pretreatments for walnut shell and corn stover biorefining using two way heterogeneity evaluation (2019) *Renewable Energy*, 132, pp. 950-958
67. Hussain, A., Chaniago, Y.D., Riaz, A., Lee, M. Process Design Alternatives for Producing Ultra-high-purity Electronic-Grade Propylene Glycol Monomethyl Ether Acetate (2019) *Industrial and Engineering Chemistry Research*, 58 (6), pp. 2246-2257.
68. Lee, S.H., Lee, K.-S., Sorcar, S., Razzaq, A., Lee, M.-G., In, S.-I. Novel porous brain electrodes for augmented local field potential signal detection (2019) *Materials*, 12 (3), art. no. 542,
69. Ishaq, S., Tamime, R., Bilad, M.R., Khan, A.L. Mixed matrix membranes comprising of polysulfone and microporous Bio-MOF-1: Preparation and gas separation properties (2019) *Separation and Purification Technology*, 210, pp. 442-451.
70. Zagho, M.M., AlMaadeed, M.A.A., Majeed, K. Role of TiO<sub>2</sub> and carbon nanotubes on polyethylene, and effect of accelerated weathering on photo oxidation and mechanical properties (2019) *Journal of Vinyl and Additive Technology*, 25 (1), pp. 19-25.
71. Tran, X.T., Park, S.S., Song, S., Haider, M.S., Imran, S.M., Hussain, M., Kim, H.T. Electroconductive performance of polypyrrole/reduced graphene oxide/carbon nanotube composites synthesized via in situ oxidative polymerization (2019) *Journal of Materials Science*, 54 (4), pp. 3156-3173.
72. Abbas, T., Wadhawan, T., Khan, A., McEvoy, J., Khan, E. A biologically stimulated industrial

## Publications

- waste for treating pesticides in water (2019) WEFTEC 2019 - 92nd Annual Water Environment Federation's Technical Exhibition and Conference, pp. 3737-3738.
73. Abbas, T., Wadhawan, T., Khan, A., McEvoy, J., Khan, E. A low-cost industrial waste-based point-of-use filter for treating pesticide contaminated water (2019) WEFTEC 2019 - 92nd Annual Water Environment Federation's Technical Exhibition and Conference, pp. 2124-2125.
74. Sajid, M., Ayoub, M., Uemura, Y., Yusup, S., Saleem, M., Abdullah, B., Khan, A.U. Comparative study of glycerol conversion to polyglycerol via conventional and microwave irradiation reactor (2019) *Materials Today: Proceedings*, 16, pp. 2101-2107.
75. Doggar, M.G., Khurram, M.S., Mirza, S., Ghauri, M., Jamil, F., Muhammad, N., Rafiq, S., Jaffery, M.H. Biomass power generation potential and utilization in Pakistan (2019) *Current Organic Chemistry*, 23 (21), pp. 2350-2365.
76. Gardazi, S.M.H., Shah, J.A., Ashfaq, T., Sherazi, T.A., Ali, M.A., Pervez, A., Rashid, N., Iqbal, J., Amin, B.A.Z., Bilal, M. Equilibrium, kinetics and thermodynamic study of the adsorptive removal of methylene blue from industrial wastewater by white cedar sawdust (2019) *Environment Protection Engineering*, 45 (3), pp. 5-22.
77. Fazal, T., Faisal, A., Mushtaq, A., Hafeez, A., Javed, F., Alaud Din, A., Rashid, N., Aslam, M., Rehman, M.S.U., Rehman, F. Macroalgae and coal -based biochar as a sustainable bioresource reuse for treatment of textile wastewater (2019) *Biomass Conversion and Biorefinery*, .
78. Tabinda, A.B., Fatima, U., Batool, M., Yasar, A., Rasheed, R., Iqbal, A., Mahfooz, Y. A study on recycling and reuse of sugar mill industrial waste (2019) *Energy Sources, Part A: Recovery, Utilization and Environmental Effects*
79. Inayat, A., Jamil, F., Raza, M., Khurram, S., Ghenai, C., Al-Muhateb, A.H. Upgradation of waste cooking oil to biodiesel in the presence of green catalyst derived from date seeds (2019) *Biofuels*
80. Aslam, A., Fazal, T., Zaman, Q.U., Shan, A., Rehman, F., Iqbal, J., Rashid, N., Rehman, M.S.U. Biorefinery of microalgae for nonfuel products (2019) *Microalgae Cultivation for Biofuels Production*, pp. 197-209.
81. Alvi, M.A.U.R., Khalid, M.W., Ahmad, N.M., Niaz, M.B.K., Anwar, M.N., Batool, M., Cheema, W., Rafiq, S. Polymer concentration and solvent variation correlation with the morphology and water filtration analysis of polyether sulfone microfiltration membrane (2019) *Advances in Polymer Technology*, 2019, art. no. 8074626,
82. Ali, M., Saleem, M., Khan, Z., Watson, I.A. The use of crop residues for biofuel production (2019) *Biomass, Biopolymer-Based Materials, and Bioenergy: Construction, Biomedical, and other Industrial Applications*, pp. 369-395

## Publications

83. Kim, J., Aslam, M., Ahmad, R. Alumina membrane bioreactor (2019) *Current Trends and Future Developments on (Bio-) Membranes: Ceramic Membrane Bioreactors*, pp. 115-139.
84. Shehzad, N., Tahir, M., Johari, K., Murugesan, T., Hussain, M. Fabrication of highly efficient and stable indirect Z-scheme assembly of AgBr/TiO<sub>2</sub> via graphene as a solid-state electron mediator for visible light induced enhanced photocatalytic H<sub>2</sub> production (2019) *Applied Surface Science*, 463, pp. 445-455.
85. Yasin, M., Cha, M., Chang, I.S., Atiyeh, H.K., Munasinghe, P., Khanal, S.K. Syngas fermentation into biofuels and biochemicals (2019) *Biomass, Biofuels, Biochemicals: Biofuels: Alternative Feedstocks and Conversion Processes for the Production of Liquid and Gaseous Biofuels*, pp. 301-327
86. Rashid, N., Selvaratnam, T., Park, W.-K. Resource recovery from waste streams using microalgae: Opportunities and threats (2019) *Microalgae Cultivation for Biofuels Production*, pp. 337-351.
87. Saqib, S., Rafiq, S., Chawla, M., Saeed, M., Muhammad, N., Khurram, S., Majeed, K., Khan, A.L., Ghauri, M., Jamil, F., Aslam, M. Facile CO<sub>2</sub> Separation in Composite Membranes (2019) *Chemical Engineering and Technology*, 42 (1), pp. 30-44.
88. Abdullah, M.A., Nazir, M.S., Tahir, Z., Abbas, Y., Akhtar, M.N., Raza, M.R., Hussein, H.A. Processing aspects and biomedical and environmental applications of sustainable nanocomposites containing nanofillers (2019) *Sustainable Polymer Composites and Nanocomposites*, pp. 727-757.

## Publications

During the Year 2020, faculty crossed the **100** research publications, some of which were successful in securing place in high impact factor journals. Details of published research articles are given below:

1. Mukhtar, A., Saqib, S., Mellon, N.B., Rafiq, S., Babar, M., Ullah, S., Muhammad, N., Khan, A.L., Ayoub, M., Ibrahim, M., Maqsood, K., Bustam, M.A., Al-Sehemi, A.G., Klemeš, J.J., Asif, S., Bokhari, A. A review on CO<sub>2</sub> capture via nitrogen-doped porous polymers and catalytic conversion as a feedstock for fuels (2020) *Journal of Cleaner Production*, 277, art. no. 123999, .
2. Siddiqi, S.A., Rahman, S., Khan, M.M., Rafiq, S., Inayat, A., Khurram, M.S., Seerangurayar, T., Jamil, F. Potential of dates (*Phoenix dactylifera* L.) as natural antioxidant source and functional food for healthy diet (2020) *Science of the Total Environment*, 748, art. no. 141234, .
3. Ahmed, A., Abu Bakar, M.S., Sukri, R.S., Hussain, M., Farooq, A., Moogi, S., Park, Y.-K. Sawdust pyrolysis from the furniture industry in an auger pyrolysis reactor system for biochar and bio-oil production (2020) *Energy Conversion and Management*, 226, art. no. 113502, .
4. Ali, S., Lee, J., Kim, H., Hwang, Y., Razzaq, A., Jung, J.-W., Cho, C.-H., In, S.-I. Sustained, photocatalytic CO<sub>2</sub> reduction to CH<sub>4</sub> in a continuous flow reactor by earth-abundant materials: Reduced titania-Cu<sub>2</sub>O Z-scheme heterostructures (2020) *Applied Catalysis B: Environmental*, 279, art. no. 119344
5. Qasim, U., Ali, M., Usman, M. Optimization of wheat-straw-extracted cellulose via response surface methodology and mechanical properties of its poly(lactide)-based biocomposites (2020) *Polymer Composites*, 41 (12), pp. 5355-5364.
6. Al-Muhtaseb, A.H., Osman, A.I., Jamil, F., Al-Riyami, M., Al-Haj, L., Allothman, A.A., Htet Kyaw, H., Tay Zar Myint, M., Abu-Jrai, A., Pon-nusamy, V.K. Facile technique towards clean fuel production by upgrading waste cooking oil in the presence of a heterogeneous catalyst (2020) *Journal of King Saud University - Science*, 32 (8), pp. 3410-3416.
7. Ahmad, N., Ahmad, N., Ahmed, U. Process design and techno-economic evaluation for the production of platform chemical for hydrocarbon fuels from lignocellulosic biomass using biomass-derived  $\gamma$ -valerolactone (2020) *Renewable Energy*, 161, pp. 750-755.
8. Abu Bakar, M.S., Ahmed, A., Jeffery, D.M., Hidayat, S., Sukri, R.S., Mahlia, T.M.I., Jamil, F., Khurram, M.S., Inayat, A., Moogi, S., Park, Y.-K. Pyrolysis of solid waste residues from Lemon Myrtle essential oils extraction for bio-oil production (2020) *Bioresource Technology*, 318, art. no. 123913.
9. Qasim, U., Fatima, R., Usman, M. Efficient barrier properties of mechanically enhanced agro-extracted cellulosic biocomposites (2020) *Materials Today Chemistry*, 18, art. no. 100378, .

## Publications

10. Tahir, K., Miran, W., Jang, J., Shahzad, A., Mozta-hida, M., Jeon, H., Kim, B., Lim, S.-R., Lee, D.S. Selectively enriched mixed sulfate-reducing bacteria for acrylamide biodegradation (2020) *International Journal of Environmental Science and Technology*, 17 (12), pp. 4693-4702.
11. Najam, M., Hussain, M., Ali, Z., Maafa, I.M., Akhter, P., Majeed, K., Ahmed, A., Shehzad, N. Influence of silica materials on synthesis of elastomer nanocomposites: A review (2020) *Journal of Elastomers and Plastics*, 52 (8), pp. 747-771.
12. Naseer, A., Hussain, M., Shakir, I., Abbas, Q., Yilmaz, D., Zahra, M., Raza, R. The robust catalysts ( $\text{Ni}_{1-x}\text{-Mox}$ /doped ceria and  $\text{Zn}_{1-x}\text{-Mox}$ /doped ceria,  $x = 0.1$  and  $0.3$ ) for efficient natural gas reforming in solid oxide fuel cells (2020) *Electrochimica Acta*, 361, art. no. 137033,
13. Abbas, T., Wadhawan, T., Khan, A., McEvoy, J., Khan, E. Virgin ( $\text{Fe}_0$ ) and microbially regenerated ( $\text{Fe}^{2+}$ ) iron turning waste for treating chlorinated pesticides in water (2020) *Journal of Hazardous Materials*, 398, art. no. 122980,
14. Ahmad, N., Ahmad, N., Maafa, I.M., Ahmed, U., Akhter, P., Shehzad, N., Amjad, U.-E.-E., Hussain, M. Thermal conversion of polystyrene plastic waste to liquid fuel via ethanolysis (2020) *Fuel*, 279, art. no. 118498,
15. Abdullah, A., Ahmed, A., Akhter, P., Razzaq, A., Zafar, M., Hussain, M., Shahzad, N., Majeed, K., Khurram, S., Bakar, M.S.A., Park, Y.-K. Bioenergy potential and thermochemical characterization of lignocellulosic biomass residues available in Pakistan (2020) *Korean Journal of Chemical Engineering*, 37 (11), pp. 1899-1906.
16. Ansari, S.H., Ahmed, A., Razzaq, A., Hildebrandt, D., Liu, X., Park, Y.-K. Incorporation of solar-thermal energy into a gasification process to co-produce bio-fertilizer and power (2020) *Environmental Pollution*, 266, art. no. 115103.
17. Irshad, M.A., Nawaz, R., Zia ur Rehman, M., Imran, M., Ahmad, J., Ahmad, S., Inam, A., Razzaq, A., Rizwan, M., Ali, S. Synthesis and characterization of titanium dioxide nanoparticles by chemical and green methods and their antifungal activities against wheat rust (2020) *Chemosphere*, 258, art. no. 127352,
18. Mukhtar, A., Mellon, N.B., Bustam, M.A., Saqib, S., Lee, S.-P., Kareem, F.A., Ullah, S. Impact of amine functionality on the selective  $\text{CO}_2/\text{CH}_4$  adsorption behavior of porous covalent triazine adsorbent (2020) *Journal of Natural Gas Science and Engineering*, 83, art. no. 103582.
19. Chowdhury, T., Chowdhury, H., Hossain, N., Ahmed, A., Hossen, M.S., Chowdhury, P., Thiruganasambandam, M., Saidur, R. Latest advancements on livestock waste management and biogas production: Bangladesh's perspective (2020) *Journal of Cleaner Production*, 272, art. no. 122818.
20. Ishaq, M., Gilani, M.A., Afzal, Z.M., Bilad, M.R., Nizami, A.-S., Rehan, M., Tahir, E., Khan, A.L. Novel Poly Deep Eutectic Solvents Based Sup-

## Publications

- ported Liquid Membranes for CO<sub>2</sub> Capture (2020) *Frontiers in Energy Research*, 8, art. no. 595041.
21. Shehzad, N., Zafar, M., Ashfaq, M., Razzaq, A., Akhter, P., Ahmad, N., Hafeez, A., Azam, K., Hussain, M., Kim, W.Y. Development of AgFeO<sub>2</sub>/RgO/tio<sub>2</sub> ternary composite photocatalysts for enhanced photocatalytic dye decolorization (2020) *Crystals*, 10 (10), art. no. 923, pp. 1-15.
22. Azam, K., Raza, R., Shezad, N., Shabir, M., Yang, W., Ahmad, N., Shafiq, I., Akhter, P., Razzaq, A., Hussain, M. Development of recoverable magnetic mesoporous carbon adsorbent for removal of methyl blue and methyl orange from wastewater (2020) *Journal of Environmental Chemical Engineering*, 8 (5), art. no. 104220,
23. Iqbal, S., Zahoor, C., Musaddiq, S., Hussain, M., Begum, R., Irfan, A., Azam, M., Farooqi, Z.H. Silver nanoparticles stabilized in polymer hydrogels for catalytic degradation of azo dyes (2020) *Ecotoxicology and Environmental Safety*, 202, art. no. 110924,
24. Razzaq, A., Ali, S., Asif, M., In, S.-I. Layered double hydroxide (LDH) based photocatalysts: An outstanding strategy for efficient photocatalytic CO<sub>2</sub> conversion (2020) *Catalysts*, 10 (10), art. no. 1185, pp. 1-42
25. Shahid, M.K., Kashif, A., Rout, P.R., Aslam, M., Fuwad, A., Choi, Y., Banu J, R., Park, J.H., Kumar, G. A brief review of anaerobic membrane bioreactors emphasizing recent advancements, fouling issues and future perspectives (2020) *Journal of Environmental Management*, 270, art. no. 110909,
26. Jang, N., Lee, M., Yasin, M., Chang, I.S. Behavior of CO-water mass transfer coefficient in membrane sparger-integrated bubble column for synthesis gas fermentation (2020) *Bioresource Technology*, 311, art. no. 123594,
27. Ju, B.-Y., Yang, W.-S., Zhang, Q., Hussain, M., Xiu, Z.-Y., Qiao, J., Wu, G.-H. Research progress on the characterization and repair of graphene defects (2020) *International Journal of Minerals, Metallurgy and Materials*, 27 (9), pp. 1179-1190.
28. Mei, Y., Li, H., Yang, W., Wu, J., Li, X., Xiu, Z., Fu, J., Hussain, M., Chen, G., Wu, G. In-situ synthesis of Al<sub>3</sub>BC/Al composites from amorphous boron and graphene nanoplates by solid reaction (2020) *Journal of Alloys and Compounds*, 832, art. no. 154912,
29. Waqas, S., Bilad, M.R., Man, Z., Wibisono, Y., Jaafar, J., Indra Mahlia, T.M., Khan, A.L., Aslam, M. Recent progress in integrated fixed-film activated sludge process for wastewater treatment: A review (2020) *Journal of Environmental Management*, 268, art. no. 110718
30. Bilad, M.R., Mat Nawi, N.I., Subramaniam, D.D., Shamsuddin, N., Khan, A.L., Jaafar, J., Nandiyanto, A.B.D. Low-pressure submerged membrane filtration for potential reuse of detergent and water from laundry wastewater (2020) *Journal of Water Process Engineering*, 36, art. no. 101264

## Publications

31. Fatima, M., Saeed, M., Aslam, M., Lindström, R.W., Farooq, R. Application of novel bacterial consortium for biodegradation of aromatic amine 2 -ABS using response surface methodology (2020) *Journal of Microbiological Methods*, 174, art. no. 105941
32. Shoaib, M., Ul-Haq, N., ul Haq, A. The Influence of pH on the Morphology and Electrochemical Behavior of Pd–Pt thin Films Prepared by Electroless Deposition (2020) *Protection of Metals and Physical Chemistry of Surfaces*, 56 (4), pp. 785-792
33. Mei, Y., Shao, P.-Z., Sun, M., Chen, G.-Q., Hussain, M., Huang, F.-L., Zhang, Q., Gao, X.-S., Pei, Y.-Y., Zhong, S.-J., Wu, G.-H. Deformation treatment and microstructure of graphene-reinforced metal matrix nanocomposites: A review of graphene post-dispersion (2020) *International Journal of Minerals, Metallurgy and Materials*, 27 (7), pp. 888-899.
34. Khan, H.M., Iqbal, T., Ali, C.H., Yasin, S., Jamil, F. Waste quail beaks as renewable source for synthesizing novel catalysts for biodiesel production (2020) *Renewable Energy*, 154, pp. 1035-1043.
35. Sherin, L., Sohail, A., Amjad, U.-E.-S., Mustafa, M., Jabeen, R., Ul-Hamid, A. Facile green synthesis of silver nanoparticles using Terminalia bellerica kernel extract for catalytic reduction of anthropogenic water pollutants (2020) *Colloids and Interface Science Communications*, 37, art. no. 100276,
36. Ahmed, A., Abu Bakar, M.S., Hamdani, R., Park, Y.-K., Lam, S.S., Sukri, R.S., Hussain, M., Majeed, K., Phusunti, N., Jamil, F., Aslam, M. Valorization of underutilized waste biomass from invasive species to produce biochar for energy and other value-added applications (2020) *Environmental Research*, 186, art. no. 109596
37. Ali, S., Fazal, T., Javed, F., Hafeez, A., Akhtar, M., Haider, B., Saif ur Rehman, M., Zimmerman, W.B., Rehman, F. Investigating biodiesel production strategies as a sustainable energy resource for Pakistan (2020) *Journal of Cleaner Production*, 259, art. no. 120729
38. Shamair, Z., Habib, N., Gilani, M.A., Khan, A.L. Theoretical and experimental investigation of CO<sub>2</sub> separation from CH<sub>4</sub> and N<sub>2</sub> through supported ionic liquid membranes (2020) *Applied Energy*, 268, art. no. 115016,
39. Saqib, S., Rafiq, S., Muhammad, N., Khan, A.L., Mukhtar, A., Mellon, N.B., Man, Z., Ullah, S., Al-Sehemi, A.G., Jamil, F. Influence of interfacial layer parameters on gas transport properties through modeling approach in MWCNTs based mixed matrix composite membranes (2020) *Chemical Engineering Science*, 218, art. no. 115543
40. Ahmed, M.A., Mushtaq, A., Terán-Hilares, R., Saif Ur Rehman, M., Iqbal, J., Raja, A.A., Weon, C.J., Han, J.-I. Dilute acid hydrolysis of sugar cane bagasse using a laboratory twin gear reactor (2020) *Renewable Energy*, 153, pp. 61-66.

## Publications

41. Bano, S., Tariq, S.R., Ilyas, A., Aslam, M., Bilad, M.R., Nizami, A.-S., Khan, A.L. Synergistic solution of CO<sub>2</sub> capture by novel lanthanide-based MOF-76 yttrium nanocrystals in mixed-matrix membranes (2020) *Energy and Environment*, 31 (4), pp. 692-712
42. Qadeer, K., Rehman, W.U., Sheri, A.M., Park, I., Kim, H.K., Jeon, M. A Long Short-Term Memory (LSTM) network for hourly estimation of PM<sub>2.5</sub> concentration in two cities of South Korea (2020) *Applied Sciences (Switzerland)*, 10 (11), art. no. 3984,
43. Ju, B., Yang, W., Shao, P., Hussain, M., Zhang, Q., Xiu, Z., Hou, X., Qiao, J., Wu, G. Effect of interfacial microstructure on the mechanical properties of GNPs/Al composites (2020) *Carbon*, 162, pp. 346-355
44. Nawli, N.I.M., Chean, H.M., Shamsuddin, N., Bilad, M.R., Narkkun, T., Faungnawakij, K., Khan, A.L. Development of hydrophilic PVDF membrane using vapour induced phase separation method for produced water treatment (2020) *Membranes*, 10 (6), art. no. 121, pp. 1-17.
45. Shao, P., Chen, G., Ju, B., Yang, W., Zhang, Q., Wang, Z., Tan, X., Pei, Y., Zhong, S., Hussain, M., Wu, G. Effect of hot extrusion temperature on graphene nanoplatelets reinforced Al6061 composite fabricated by pressure infiltration method (2020) *Carbon*, 162, pp. 455-464
46. Shahbaz, M., Al-Ansari, T., Aslam, M., Khan, Z., Inayat, A., Athar, M., Naqvi, S.R., Ahmed, M.A., McKay, G. A state of the art review on biomass processing and conversion technologies to produce hydrogen and its recovery via membrane separation (2020) *International Journal of Hydrogen Energy*, 45 (30), pp. 15166-15195
47. Fazal, T., Razzaq, A., Javed, F., Hafeez, A., Rashid, N., Amjad, U.S., Ur Rehman, M.S., Faisal, A., Rehman, F. Integrating adsorption and photocatalysis: A cost effective strategy for textile wastewater treatment using hybrid biochar-TiO<sub>2</sub> composite (2020) *Journal of Hazardous Materials*, 390, art. no. 121623,
48. Ali Khan, Z., Jamil, S., Akhtar, A., Mustehsan Bashir, M., Yar, M. Chitosan based hybrid materials used for wound healing applications- A short review (2020) *International Journal of Polymeric Materials and Polymeric Biomaterials*, 69 (7), pp. 419-436.
49. Khan, A.N., Nadeem, M.A., Hussain, M.S., Aslam, M., Bazmi, A.A. A forecasting model approach of sustainable electricity management by developing adaptive neuro-fuzzy inference system (2020) *Environmental Science and Pollution Research*, 27 (15), pp. 17607-17618
50. Majeed, K., Qyyum, M.A., Nawaz, A., Ahmad, A., Naqvi, M., He, T., Lee, M. Shuffled complex evolution-based performance enhancement and analysis of cascade liquefaction process for large-scale LNG production (2020) *Energies*, 13 (10), art. no. 2511

## Publications

51. Fahim, R., Lu, X., Jilani, G.A., Mahdi, H., Aslam, M. Synergistic Long-Term Temperate Climate Nitrogen Removal Performance in Open Raceway Pond and Horizontal Subsurface Flow Constructed Wetland Operated Under Different Regimes (2020) *Water, Air, and Soil Pollution*, 231 (5), art. no. 255,
52. Mukhtar, A., Saqib, S., Mellon, N.B., Babar, M., Rafiq, S., Ullah, S., Bustam, M.A., Al-Sehemi, A.G., Muhammad, N., Chawla, M. CO<sub>2</sub> capturing, thermo-kinetic principles, synthesis and amine functionalization of covalent organic polymers for CO<sub>2</sub> separation from natural gas: A review (2020) *Journal of Natural Gas Science and Engineering*, 77, art. no. 103203
53. Hamid, U., Rauf, A., Ahmed, U., Selim Arif Sher Shah, M., Ahmad, N. Techno-economic assessment of process integration models for boosting hydrogen production potential from coal and natural gas feedstocks (2020) *Fuel*, 266, art. no. 117111,
54. Chang, S., Ahmad, R., Kwon, D.-E., Kim, J. Hybrid ceramic membrane reactor combined with fluidized adsorbents and scouring agents for hazardous metal-plating wastewater treatment (2020) *Journal of Hazardous Materials*, 388, art. no. 121777,
55. Wang, H., Rehman, K.U., Feng, W., Yang, D., Rehman, R.U., Cai, M., Zhang, J., Yu, Z., Zheng, L. Physicochemical structure of chitin in the developing stages of black soldier fly (2020) *International Journal of Biological Macromolecules*, 149, pp. 901-907
56. Hafeez, A., Ammar Taqvi, S.A., Fazal, T., Javed, F., Khan, Z., Amjad, U.S., Bokhari, A., Shehzad, N., Rashid, N., Rehman, S., Rehman, F. Optimization on cleaner intensification of ozone production using Artificial Neural Network and Response Surface Methodology: Parametric and comparative study (2020) *Journal of Cleaner Production*, 252, art. no. 119833,
57. Lee, H., Ahmad, R., Kim, J. Alginate to simulate biofouling in submerged fluidized ceramic membrane reactor: Effect of solution pH and ionic strength (2020) *Bioresource Technology*, 302, art. no. 122813,
58. Naseer, A., Hamid, A., Ghauri, M., Nasrullah, A., Iqbal, J., Shah, N.S., Rafiq, S., Irfan, M., Muhammad, N. Lignin/alginate/hydroxyapatite composite beads for the efficient removal of copper and nickel ions from aqueous solutions (2020) *Desalination and Water Treatment*, 184, pp. 199-213.
59. Qyyum, M.A., Yasin, M., Nawaz, A., He, T., Ali, W., Haider, J., Qadeer, K., Nizami, A.-S., Moustakas, K., Lee, M. Single-solution-based vortex search strategy for optimal design of offshore and onshore natural gas liquefaction processes (2020) *Energies*, 13 (7), art. no. 1732
60. Jang, N., Yasin, M., Lee, M., Kang, H., Chang, I.S. Gas circulation rate and medium exchange ratio as influential factors affecting ethanol production in carbon monoxide fermentation using a

## Publications

- packed-bed reactor (2020) *Sustainable Energy and Fuels*, 4 (4), pp. 1963-1973.
61. Babar, Z.B., Ashraf, F., Park, J.-H., Lim, H.-J. Volatility parameters of secondary organic aerosol components determined using a thermal denuder (2020) *Atmospheric Environment*, 226, art. no. 117405
62. Rehman, W.U., Mercian, Z.M.A., Bhat, A.H., Guan, B.H., Sulaimon, A.A., Khan, I.U., Ullah, H., Mukhtar, A., Saqib, S., Hameed, A., Yasir, M., Ahmad, A. Synthesis and Enhancement of Thermal Conductivity of Surfactant Free MWCNTs-Jatropha Oil-based Nanofluid (2020) *IOP Conference Series: Materials Science and Engineering*, 736 (2), art. no. 022076
63. Yasmeen, I., Ilyas, A., Shamair, Z., Gilani, M.A., Rafiq, S., Bilad, M.R., Khan, A.L. Synergistic effects of highly selective ionic liquid confined in nanocages: Exploiting the three component mixed matrix membranes for CO<sub>2</sub> capture (2020) *Chemical Engineering Research and Design*, 155, pp. 123-132.
64. Abbas, Y., Jamil, F., Rafiq, S., Ghauri, M., Khurram, M.S., Aslam, M., Bokhari, A., Faisal, A., Rashid, U., Yun, S., Mubeen, M. Valorization of solid waste biomass by inoculation for the enhanced yield of biogas (2020) *Clean Technologies and Environmental Policy*, 22 (2), pp. 513-522
65. Qyyum, M.A., Qadeer, K., Ahmad, A., Ahmed, F., Lee, M. Two-phase expander refrigeration cycles with ethane–nitrogen: A cost-efficient alternative LNG processes for offshore applications (2020) *Journal of Cleaner Production*, 248, art. no. 119189
66. Habib, N., Shamair, Z., Tara, N., Nizami, A.-S., Akhtar, F.H., Ahmad, N.M., Gilani, M.A., Bilad, M.R., Khan, A.L. Development of highly permeable and selective mixed matrix membranes based on Pebax®1657 and NOTT-300 for CO<sub>2</sub> capture (2020) *Separation and Purification Technology*, 234, art. no. 116101,
67. Ullah, S., Bustam, M.A., Assiri, M.A., Al-Sehemi, A.G., Gonfa, G., Mukhtar, A., Abdul Kareem, F.A., Ayoub, M., Saqib, S., Mellon, N.B. Synthesis and characterization of mesoporous MOF UMCM-1 for CO<sub>2</sub>/CH<sub>4</sub> adsorption; an experimental, isotherm modeling and thermodynamic study (2020) *Microporous and Mesoporous Materials*, 294, art. no. 109844
68. Qyyum, M.A., Haider, J., Qadeer, K., Valentina, V., Khan, A., Yasin, M., Aslam, M., De Guido, G., Pellegrini, L.A., Lee, M. Biogas to liquefied biomethane: Assessment of 3P's—Production, processing, and prospects (2020) *Renewable and Sustainable Energy Reviews*, 119, art. no. 109561
69. Khan, A.L., Habib, N., Aslam, M. Metal organic frameworks-based mixed matrix membranes for gas separation (2020) *Nanomaterials for Air Remediation*, pp. 273-292
70. Lee, M., Yasin, M., Jang, N., Chang, I.S. A simultaneous gas feeding and cell-recycled reaction (SGCR) system to achieve biomass boosting and

## Publications

- high acetate titer in microbial carbon monoxide fermentation (2020) *Bioresource Technology*, 298, art. no. 122549,
71. Reginald, S.S., Lee, H., Lee, Y.S., Yasin, M., Chang, I.S. Dissolved carbon monoxide concentration monitoring platform based on direct electrical connection of CO dehydrogenase with electrically accessible surface structure (2020) *Bioresource Technology*, 297, art. no. 122436
72. Osman, A., Nawati, N.I.M., Samsuri, S., Bilad, M.R., Shamsuddin, N., Khan, A.L., Jaafar, J., Nordin, N.A.H. Patterned membrane in an energy-efficient tilted panel filtration system for fouling control in activated sludge filtration (2020) *Polymers*, 12 (2), art. no. 432
73. Yusoff, M.H.M., Nyunt, E.K., Bilad, M.R., Arahman, N., Mulyati, S., Rizal, S., Nordin, N.A.H., Leam, J.J., Khan, A.L., Jaafar, J. Hybrid membrane distillation and wet scrubber for simultaneous recovery of heat and water from flue gas (2020) *Entropy*, 22 (2), art. no. 178
74. Akhtar, M.N., Nazir, M.S., Tahir, Z., Qamar, S., Khan, M.A. Impact of Co doping on physical, structural, microstructural and magnetic features of MgZn nanoferrites for high frequency applications (2020) *Ceramics International*, 46 (2), pp. 1750-1759
75. Nawati, N.I.M., Arifin, S.N.H.M., Hizam, S.M., Rampun, E.L.A., Bilad, M.R., Elma, M., Khan, A.L., Wibisono, Y., Jaafar, J. *Chlorella vulgaris* broth harvesting via standalone forward osmosis using seawater draw solution (2020) *Bioresource Technology Reports*, 9, art. no. 100394
76. Tahir, K., Miran, W., Jang, J., Shahzad, A., Mozta-hida, M., Kim, B., Lee, D.S. A novel MXene-coated biocathode for enhanced microbial electro-synthesis performance (2020) *Chemical Engineering Journal*, 381, art. no. 122687,
77. Ahmad, N., Ahmad, N., Maafa, I.M., Ahmed, U., Akhter, P., Shehzad, N., Amjad, U.-E.-E., Hussain, M., Javaid, M. Conversion of polyisoprene based rubber to value-added chemicals and liquid fuel via ethanolysis: Effect of operating parameters on product quality and quantity (2020) *Energy*, 191, art. no. 116543,
78. Gong, D., Cao, Y., Zhan, Y., Liu, X., Guan, J., Jiang, L., Kang, P., Yu, Z., Hussain, M., Wu, G. Micro-creep behavior and microstructure evolution of SiCp/2024Al composite (2020) *Materials Science and Engineering A*, 771, art. no. 138606
79. Shakoor, A., Khan, A.L., Akhter, P., Aslam, M., Bilad, M.R., Maafa, I.M., Moustakas, K., Nizami, A.-S., Hussain, M. CO<sub>2</sub> from waste to resource by developing novel mixed matrix membranes (2020) *Environmental Science and Pollution Research*
80. Ahmed, U., Zahid, U., Ahmad, N. Techno-Economic Assessment of Conceptual Design for Methanol Production Using Coal and Natural Gas Based Parallel Process Configuration (2020) *Computer Aided Chemical Engineering*, 48, pp. 1441-1446.

## Publications

81. Inayat, A., Ghenai, C., Hammad, D., Almarzooqi, S., Tariq, R., Jamil, F., Bokhari, A., Ayoub, M. Optimization of biodiesel production from neem oil using KOH supported with activated carbon (2020) *Chemical Engineering Transactions*, 81, pp. 1051-1056.
82. Amjad, U.-E.-S., Ishaq, M., Rehman, H.U., Ahmad, N., Sherin, L., Hussain, M., Mustafa, M. Diesel and gasoline like fuel production with minimum styrene content from catalytic pyrolysis of polystyrene (2020) *Environmental Progress and Sustainable Energy*
83. Al-Shidi, H.K., Sulaiman, H., Al-Reasi, H.A., Jamil, F., Aslam, M. Human and ecological risk assessment of heavy metals in different particle sizes of road dust in Muscat, Oman (2020) *Environmental Science and Pollution Research*
84. Saulat, H., Khan, M.M., Aslam, M., Chawla, M., Rafiq, S., Zafar, F., Khan, M.M., Bokhari, A., Jamil, F., Bhutto, A.W., Bazmi, A.A. Wind speed pattern data and wind energy potential in Pakistan: current status, challenging platforms and innovative prospects (2020) *Environmental Science and Pollution Research*
85. Amin, N., Tahir, M.S., Saleem, M., Khan, Z., Aslam, M., Bazmi, A.A., Ghauri, M., Sagir, M. Rheological improvement in performance of low-rank coal–water slurries using novel cost-effective additives (2020) *Asia-Pacific Journal of Chemical Engineering*, 15 (1), art. no. e2400,
86. Malik, S., Iqbal, A., Imran, A., Usman, M., Nadeem, M., Asif, S., Bokhari, A. Impact of economic capabilities and population agglomeration on PM2.5 emission: empirical evidence from sub-Saharan African countries (2020) *Environmental Science and Pollution Research*
87. Saeed, U., Khan, A.L., Gilani, M.A., Aslam, M., Khan, A.U. CO2 separation by supported liquid membranes synthesized with natural deep eutectic solvents (2020) *Environmental Science and Pollution Research*
88. Hamayun, M.H., Maafa, I.M., Hussain, M., Aslam, R. Simulation study to investigate the effects of operational conditions on methylcyclohexane dehydrogenation for hydrogen production (2020) *Energies*, 13 (1), art. no. 206,
89. Watson, I., Kamble, P., Shanks, C., Khan, Z., El Darra, N. Decontamination of chilli flakes in a fluidized bed using combined technologies: Infrared, UV and ozone (2020) *Innovative Food Science and Emerging Technologies*, 59, art. no. 102248
90. Waqas, S., Bilad, M.R., Man, Z.B., Klaysom, C., Jaafar, J., Khan, A.L. An integrated rotating biological contactor and membrane separation process for domestic wastewater treatment (2020) *Alexandria Engineering Journal*
91. Hafeez, A., Javed, F., Fazal, T., Shezad, N., Amjad, U.-E.-S., Rehman, M.S.U., Rehman, F. Intensification of ozone generation and degradation of azo dye in non-thermal hybrid corona-DBD plasma micro-reactor (2020) *Chemical Engineering*

## Publications

- and Processing - Process Intensification, art. no. 108205
92. Jamil, F., Al-Riyami, M., Al-Haj, L., Al-Muhtaseb, A.H., Myint, M.T.Z., Baawain, M., Al-Abri, M. Waste Balanites aegyptiaca seed oil as a potential source for biodiesel production in the presence of a novel mixed metallic oxide catalyst (2020) International Journal of Energy Research,
93. Qasim, U., Osman, A.I., Al-Muhtaseb, A.H., Farrell, C., Al-Abri, M., Ali, M., Vo, D.-V.N., Jamil, F., Rooney, D.W. Renewable cellulosic nanocomposites for food packaging to avoid fossil fuel plastic pollution: a review (2020) Environmental Chemistry Letters
94. Tahir, K., Miran, W., Jang, J., Shahzad, A., Moztahida, M., Kim, B., Lim, S.-R., Lee, D.S. Carbamazepine biodegradation and volatile fatty acids production by selectively enriched sulfate-reducing bacteria and fermentative acidogenic bacteria (2020) Journal of Chemical Technology and Biotechnology,
95. Mukhtar, A., Saqib, S., Safdar, F., Hameed, A., Rafiq, S., Mellon, N.B., Amen, R., Khan, M.S., Ullah, S., Assiri, M.A., Babar, M., Bustam, M.A., Rehman, W.U., Merican, Z.M.A. Experimental and comparative theoretical study of thermal conductivity of MWCNTs-kapok seed oil-based nanofluid (2020) International Communications in Heat and Mass Transfer, 110, art. no. 104402,
96. Tahir, K., Miran, W., Jang, J., Maile, N., Shahzad, A., Moztahida, M., Ghani, A.A., Kim, B., Jeon, H., Lim, S.-R., Lee, D.S. Nickel ferrite/MXene-coated carbon felt anodes for enhanced microbial fuel cell performance (2020) Chemosphere, art. no. 128784
97. Inayat, A., Tariq, R., Khan, Z., Ghenai, C., Kamil, M., Jamil, F., Shanableh, A. A comprehensive review on advanced thermochemical processes for bio-hydrogen production via microwave and plasma technologies (2020) Biomass Conversion and Biorefinery
98. Mukhtar, A., Ullah, S., Inayat, A., Saqib, S., Mellon, N.B., Assiri, M.A., Al-Sehemi, A.G., Khan Niazi, M.B., Jahan, Z., Bustam, M.A., Ibrahim, M. Synthesis-structure-property relationship of nitrogen-doped porous covalent triazine frameworks for pre-combustion CO<sub>2</sub> capture (2020) Energy, art. no. 119230,
99. Jamil, F., Aslam, M., Al-Muhtaseb, A.H., Bokhari, A., Rafiq, S., Khan, Z., Inayat, A., Ahmed, A., Hossain, S., Khurram, M.S., Abu Bakar, M.S. Greener and sustainable production of bioethylene from bioethanol: Current status, opportunities and perspectives (2020) Reviews in Chemical Engineering, pp. 4143-4164
100. Shafiq, I., Shafique, S., Akhter, P., Yang, W., Hussain, M. Recent developments in alumina supported hydrodesulfurization catalysts for the production of sulfur-free refinery products: A technical review (2020) Catalysis Reviews - Science and Engineering,

## Publications

101. Abdullah, A., Ahmed, A., Akhter, P., Razzaq, A., Hussain, M., Hossain, N., Abu Bakar, M.S., Khurram, S., Majeed, K., Park, Y.-K. Potential for sustainable utilisation of agricultural residues for bio-energy production in Pakistan: An overview (2020) *Journal of Cleaner Production*, art. no. 125047
102. Saqib, S., Rafiq, S., Muhammad, N., Khan, A.L., Mukhtar, A., Mellon, N.B., Man, Z., Nawaz, M.H., Jamil, F., Ahmad, N.M. Perylene based novel mixed matrix membranes with enhanced selective pure and mixed gases (CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>) separation (2020) *Journal of Natural Gas Science and Engineering*, 73, art. no. 103072
103. Akhtar, A., Andleeb, A., Waris, T.S., Bazzar, M., Moradi, A.-R., Awan, N.R., Yar, M. Neurodegenerative diseases and effective drug delivery: A review of challenges and novel therapeutics (2020) *Journal of Controlled Release*
104. Hamza, M., Ayoub, M., Shamsuddin, R.B., Mukhtar, A., Saqib, S., Zahid, I., Ameen, M., Ullah, S., Al-Sehemi, A.G., Ibrahim, M. A review on the waste biomass derived catalysts for biodiesel production (2020) *Environmental Technology and Innovation*, art. no. 101200
105. Anjum, F., Khan, I.M., Kim, J., Aslam, M., Blandin, G., Heran, M., Lesage, G. Trends and progress in AnMBR for domestic wastewater treatment and their impacts on process efficiency and membrane fouling (2020) *Environmental Technology and Innovation*, art. no. 101204
106. Hassan, M.F., Sabri, M.A., Fazal, H., Hafeez, A., Shezad, N., Hussain, M. Recent trends in activated carbon fibers production from various precursors and applications—A comparative review (2020) *Journal of Analytical and Applied Pyrolysis*, 145, art. no. 104715

## Editorial Message



**Dr. Awais Bokhari**  
**Editor-In-Chief**  
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**Engr. Mehwish Batool**  
**Assistant Editor**  
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By grace of Allah Almighty, I am pleased to share Fall 2019 - Fall 2020 newsletter of Chemical Engineering Department, CUI, Lahore Campus. I would like to thank HOD/Chairman “Dr. Murid Hussain” for giving me opportunity of providing my services as an Editor-in-Chief of this newsletter. The efforts of Engr. Mehwish Batool as an assistant editor is appreciated. Our dedicated faculty, staff and students did remarkable efforts, even in the pandemic situation, which allows me to show you numerous aspects of our department in this newsletter.

Chemical Engineering department of CUI has made important contributions to society over the years in terms of innovative and cutting edge research, processes and eco-friendly products. Here at our department we nourish our students through highly qualified faculty, modern facilities, knowledge conceiving environment, real time exposure, and systematic knowledge transfer tactics. We are taking forward the vision of rector of CUI for making CUI number one in scientific research in various engineering and nonengineering disciplines. We have adopted the international standards of academics, research and quality policy.

I hope you enjoyed my small effort for giving a glimpse of departmental progress in this newsletter.

Regards

Dr. Awais Bokhari

Editor-in-Chief