PERSONAL DATA

Associate Professor, Department of Environmental Engineering, NED University of Engineering & Technology, Karachi, Pakistan. Email: mehmood@neduet.edu.pk; mehmood_ali70@yahoo.com Office : 021-99261261-65 (Ext : 2366) ; Mobile: 00-92-3312200722

WORK EXPERIENCE

As a PhD research scholar at the School of Engineering, University of Glasgow, Scotland, UK

(2011-2015)

- Conducted research and development in the field of microalgae cultivation and harvesting
- Experience in oil extraction from vegetable oil seeds and microalgae, with physical and chemical pre-treatment methods (lysing)
- Expertise in characterization of vegetable oil seeds and microalgal lipids to produce third generation biodiesel fuel
- Extraction of carbohydrates and protein from microalgae as a food supplement
- Research experience in torrefaction (slow pyrolysis) of biomass
- Hydrothermal liquefaction and gasification of biomass
- Familiar with statistical softwares
- Familiar with GC (Gas chromatography), TGA (Thermogravimetric analysis), DSC (Differential scanning calorimetry), Fluorescence/ optical microscopy, etc.
- Exposure to and working experience in interdisciplinary research areas within the School of Engineering, School of Chemistry and School of Geographical & Earth Sciences, University of Glasgow
- Presented research posters at national and international conferences and published research papers as a first and a corresponding author in reputed journal
- Worked as an assistant with professors in tutorial, demonstrating in lab and marking home assignments in the undergraduate courses
- Experience as a graduate teaching assistant at the School of Engineering
- Assisted undergraduate and master's students in their dissertation projects in laboratory experimental work related to produce biofuels and bioenergy
- Able to work independently or in a group

Work experience on funded projects at the School of Engineering, University of Glasgow, UK

- Conducted research work on hydrothermal liquefaction of industrial wastes project funded by Department for Business, Energy and Industrial Strategy (BEIS), UK as an affiliate at the School of Engineering, University of Glasgow, UK (10th to 26th September 2019)
- Research experiences on a project with Bio-North Limited, UK, funded by Innovus (£14,200), to measure and reduce the emissions of a diesel generator and biomass pyrolysis. (January 2015- June 2015)

Work experience on a funded project at the University of Zaragoza, Spain

Conducted research studies on bio-hydrogen production from microalgae biomass at the 'Thermo-chemical Research Group', Aragon Institute of Engineering Research, University of Zaragoza, Spain (January 2015). The project was funded by BRISK (Biofuel's Research Infrastructure for Sharing Knowledge).

As an Associate Professor at NED University of Engineering & Technology, Pakistan (2006present)

- Delivering laboratory and class tutorials sessions in undergraduate level taught courses: Introduction to Environmental Engineering, Water/wastewater treatment, Physicochemical treatment processes, Industrial waste treatment, Air pollution & control, Solid waste management
- Experience in research and development project based on 'Biofuels production from indigenous biomass available in Pakistan' funded by the Advanced Studies and Research Board, NED University
- Expertise in emission testing/ engine performance of diesel engine running on biodiesel fuel blends
- Conducting research on solar drying of agricultural waste to enhance its calorific value
- Microalgae cultivation using wastewater for biofuels production
- Area coordinator (ISO-9000) for the quality management system including implementation of occupational health and safety standards in the department (2006-2010)
- In-charge Green Society, awareness programme for motivating students to plant trees in the campus for a greener environment (2006-2010)
- Supervising dissertation projects based on air pollution environmental degradation issues (automobile emissions, hospital waste incinerators and power plants)
- Able to work in a team and having good communication skills
- Experience in organizing seminars, symposiums and conferences in the department

Industrial work experience

Production Engineer, National Electronic Industries, Karachi, Pakistan (2000-2006). Maintenance Engineer, Elektron Ltd, Karachi, Pakistan (1995-2000).

Work experience with a team supervising and managing production unit, including maintenance of equipment and machinery. Planning and organizing of procurement of raw material and timely delivery of product to the consumers

EDUCATION

- **PhD** in Mechanical Engineering, University of Glasgow, Glasgow, UK (2011-2015)
- **MEng** in Environmental Engineering, NED University Karachi, Pakistan (1999-2001)
- **BEng** in Mechanical Engineering, NED University, Karachi, Pakistan (1989-1995)

REFERENCES

- 1. Dr. Ian A. Watson, (**Reader** in Systems Power and Energy Research Division), School of Engineering, University of Glasgow, UK. E-mail ID: ian.watson@glasgow.ac.uk
- 2. Dr. Muhammad Saleem, (Associate Professor, Civil Engineering Department), Jubail University College, Kingdom of Saudi Arabia. E-mail ID: saleemm@ucj.edu.sa

PROFESSIONAL MEMBERSHIPS

- 1. Pakistan Engineering Council (PEC).
- 2. Institution of Engineers, Pakistan (IEP).
- 3. Renewable & Alternative Energy Association of Pakistan (RAEP).

APPENDIX

Journal publications

- 1. Farnaz Batool, Arjumend Masood, **Mehmood Ali** (2020). Characterization of Sugarcane Bagasse Ash as Pozzolan and Influence on Concrete Properties. *Arabian Journal for Science and Engineering*. doi.org/10.1007/s13369-019-04301-y
- 2. **Mehmood Ali**, Atif Mustafa, Muhammad Saleem (2019). Comparative study between indigenous natural coagulants and alum for microalgae harvesting. *Arabian Journal for Science and Engineering*; 44 (7), 6453–6463.
- 3. **Mehmood Ali**, Beena Naqvi, Ian A. Watson (2018). Possibility of converting indigenous *Salvadora persica* L. seed oil into biodiesel in Pakistan. *International Journal of Green Energy*; 15 (7), 427-435.
- 4. **Mehmood Ali**, Ian A. Watson (2018). Mild pyrolysis of manually pressed and liquid nitrogen treated de- lipid cake of *Nannochloropsis Oculata* for bioenergy utilisation. *Energy Technology*; 6 (9), 1642-1648.
- 5. Muhammad Saleem, **Mehmood Ali**, Zia Siddiqi, Abdulrahman Saud Al Qahtani (2017). Preparation of activated carbon from acacia (*vachellia seyal*) tree branches and application to treat wastewater containing methylene blue dye. *Modern Applied Science*; 11(12): 102-108.
- 6. **Mehmood Ali**, Ian A. Watson (2017). Manual pressing of *Nannochloropsis oculata* dried biomass for enhanced lipid extraction. *NED University Journal of Research Applied Sciences;* XIV (4): 105-111.
- 7. **Mehmood Ali**, Razia Sultana, Sadia Tahir, Ian A. Watson, Muhammad Saleem. (2017). Prospects of microalgal biodiesel production in Pakistan- a review. *Renewable and Sustainable Energy Reviews*; 80:1588-1596.
- 8. **Mehmood Ali**, Ian A. Watson (2016). Torrefaction and process energy budget analysis of powdered, de- oiled, and *in situ* transesterified flaxseed cakes for energy generation. *Energy Technology*; 4 (8): 980-989.
- 9. Mehmood Ali, Ian A. Watson (2016). Microwave thermolysis and lipid recovery from dried microalgae powder for biodiesel production. *Energy Technology*; 4 (2): 319-330.
- 10. **Mehmood Ali**, Ian A. Watson (2015). Microwave treatment of wet algal paste for enhanced solvent extraction of lipids for biodiesel production. *Renewable Energy*; 76: 470-477.

- 11. Aya Abbassi, **Mehmood Ali**, Ian A. Watson (2014). Temperature dependency of cell wall destruction of microalgae with liquid nitrogen pre-treatment and hydraulic pressing. *Algal Research*; 5: 190-194.
- 12. **Mehmood Ali**, Ian A. Watson (2014). Comparison of oil extraction methods, energy analysis and biodiesel production from flaxseeds. *International Journal of Energy Research*; 38 (5): 614-625.
- 13. Jonathan R. McMillan, Ian A. Watson, **Mehmood Ali**, Weaam Jaafar (2013). Evaluation and comparison of algal cell disruption methods: microwave, water bath, blender, ultrasonic and laser treatment. *Applied Energy*; 103:128-134.
- 14. M. H. Chakrabarti, **Mehmood Ali**, Jafar N. Usmani, Saeid Baroutian, Muhammad Saleem (2013). Technical evaluation of Pongame and Jatropha B20 fuels in Pakistan. *Arabian Journal of Science and Engineering*; 38 (4): 759-766.
- 15. M. H. Chakrabarti, Mehmood Ali, Jafar N. Usmani, Nasim A. Khan, Hasan Diyauddeen B. Hasan, Muhamaad S. Islam, Abdul AA. Raman, Rozita Yusoff, Muhammad F. Irfan (2012). Status of biodiesel research and development in Pakistan. *Renewable and Sustainable Energy Reviews*; 16 (7): 4396-4405.
- 16. **Mehmood Ali,** Asif A. Shaikh (2012). Emission testing of Jatropha and Pongamia mixed biodiesel fuel in a diesel engine. *NED University Journal of Research*; Thematic Issue on Energy: 43-52.
- 17. M. H. Chakrabarti, **Mehmood Ali**, Saeid Baroutian, Muhammad Saleem (2011). A techno economic comparison between B10 of Eruca Sativa L. and other Indigenous seed oils in Pakistan, *Process Safety and Environmental Protection*; 89 (3): 165-171.
- M. H. Chakrabarti, Jafar N. Usmani, Mehmood Ali (2010). A Techno-Economic Evaluation of Two Non-Edible Vegetable Oil Based Bio Diesel in Pakistan, NED University Journal of Research; 7: 43-54.
- 19. M. H. Chakrabarti, **Mehmood Ali** (2009). Performance of Compression Ignition Engine with Indigenous Castor Oil Bio Diesel in Pakistan, *NED University Journal of Research*; **6**:10-19.
- 20. M. H. Chakrabarti, **Mehmood Ali** (2008). Engine Emissions Testing of Indigenous Bio Diesel / Diesel Fuel Blends in Pakistan, *NED University Journal of Research;* **5**: 1-9.
- 21. M. H. Chakrabarti, **Mehmood Ali** (2008). Bio Diesel from Refined Canola oil in Pakistan, *NED University Journal of Research;* **5**: 34-42.

Book section

Mehmood Ali, Muhammad Saleem, Zakir Khan and Ian A. Watson (2019). The use of crop residues for biofuel production. In: Deepak Verma, Elena Fortunati, Siddharth Jain, Xiaolei Zhang. (eds.) *Biomass, Biopolymer Based Materials, and Bioenergy*. Woodhead Publishing, pp. 369-396. ISBN: 978-0-08-102426-3 (DOI: 10.1016/B978-0-08-102426-3.00016-3).

Conference proceedings

• Mehmood Ali, Attaullah Khan, Md. Abul Kalam (2019). Physical, chemical and mechanical properties of different varieties of Jatropha curcas cultivated in Pakistan. *In:* 21st International Conference on Biomass, Bioenergy, Biofuels and Bioproducts, 10-11 January, 2019, Singapore.

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- M. Saleem and **Mehmood Ali** (2016). Sustainable Energy Measures in Saudi Arabia Based on Renewable Energy Sources: Present Actions and Future Plans. *In: 4th International Conference on Energy, Environment and Sustainable Development 2016* (*EESD 2016*), Jamshoro, Pakistan.
- Mehmood Ali, Ian A. Watson, Jamie Toney and M. Saleem (2015). Bio-crude oil from microalgal biomass to produce environmentally friendly higher value fuels and chemical compounds. *In: 7th International Civil Engineering Congress (ICEC-2015) "Sustainable Development through Advancements in Civil Engineering*". Karachi, Pakistan.

Seminars, symposiums and conferences oral presentations

- Mehmood Ali (2020). 'Potential Sources for Biodiesel Production in Pakistan'. *Clean fuels Biofuels 2020 Conference* held on 3rd February 2020, Islamabad, Pakistan.
- Mehmood Ali and Saqib J. Rind (2019). 'Engine performance and emission testing using Neem and Jatropha blended biodiesel'. *International Conference on Sustainable Energy and Green Technology 2019 (SEGT 2019)* held on 11-14 December, 2019, Bangkok, Thailand.
- Mehmood Ali (2019). 'Biodiesel's Research at NED University' at a seminar organised by the Department of Environmental Engineering, NED University of Engineering and Technology, Karachi in collaboration with Pakistan State Oil Company Limited (PSO) held on 22nd August 2019, Karachi, Pakistan.
- Mehmood Ali, Ian A. Watson, Jaime Toney (2015). Hydrothermal liquefaction of algal biomass to produce advanced biofuels. *British Organic Geochemical Society Annual Meeting*, Glasgow, UK.
- Mehmood Ali, Ian A. Watson, Jaime Toney, Lucia Garcia, Joaquin Ruiz (2015). Hydrothermal liquefaction and aqueous phase reforming of algal biomass. 5th UK Algae Conference, Glasgow, UK.
- Mehmood Ali, Ian A. Watson (2014). Pressing of microalgal biomass for enhanced lipid extraction to produce biodiesel and subsequent torrefaction of residual cake. *Algal Biotechnology Symposium*, Department of Chemical and Biological Engineering, University of Sheffield, UK.
- Mehmood Ali, Ian A. Watson (2014). Microalgal cell disruption, lipid extraction and its analysis. *Seminar at School of Geographical and Earth Sciences*, University of Glasgow, UK.
- Mehmood Ali (2010). Investigating possibility of using *Eruca sativa L*. biodiesel in a single cylinder diesel engine. 3rd National Energy Resources of Pakistan: potential, Utilisation, Conservation and Impact on environment at the Quaid-e-Awam University of Engineering and Technology, Nawabshah, Pakistan.
- Mehmood Ali (2008). Emission testing of biodiesel fuel in a compression ignition engine. *Seminar at the Environmental Engineering Department*, NED University of Engineering and Technology, Karachi, Pakistan.

PROFESSIONAL DEVELOPMENT AND TRAININGS ATTENDED

• Participation in three days 'Faculty Boot Camp' (Effective Teaching, Learning, Research and Mentoring) jointly organized by Mehran University Jamshoro and University of Utah, USA (August 1-3, 2019).

- Attended hands on training session on Gas chromatography, Atomic absorption spectrometry, High performance liquid chromatography and Thermal analysis system (TGA/DSC) at the Industrial Analytical Center (HEJ Research Institute of Chemistry), University of Karachi, Pakistan (2th May 15th July 2016).
- Attended lectures and hands-on training session on Gas chromatography, Atomic absorption spectrometry, High performance liquid chromatography and Thermal analysis system (TGA/DSC) at the Centralized Resource Laboratory, University of Peshawar, Pakistan, (March 2016).

SCHOLARSHIPS AND AWARDS

- 1. Awardee of (Pak Rs.1, 344,131) equivalent to US \$ 8960 for a research project titled "Solar biomass dryer to enhance calorific value of crop residues" from Higher Education Commission of Pakistan under National Research Program for Universities (NRPU No: 7646/Sindh/ NRPU/R&D/HEC/ 2017), (March 2019). **Project under progress**
- Recipient of (Euro €1500) from BRISK (Biofuel's research infrastructure for sharing knowledge) consortium under EU's 7th Framework at the Chemical and Environmental Engineering Department (Thermo-chemical Research Group, Aragon Institute of Engineering Research), University of Zaragoza, Spain. (January 2015).
- 3. Recipient of funding (£ 64500) for PhD scholarship under the Faculty Development Programme from NED University of Engineering and Technology, Karachi, Pakistan. (July 2011- August 2015).

INDEPENDENT STUDY PROJECTS SUPERVISED

S .	Project Title
No	
1	Optimization of biodiesel production from waste cooking oil (under progress)
2	Comparison of oven and solar drying of agricultural wastes to enhance its calorific
	values (under progress)
3	Production of bioethanol fuel from agricultural wastes (under progress)
4	Solar drying: A sustainable method for improving the higher heating value of
	agricultural wastes and food crops preservation (2020)
5	Lab scale batch production of biodiesel using solar energy (2019)
6	Production of bio-gas using various organic matters (2019)
7	Investigation and Improvement of cold flow properties of Biodiesel fuel (2019)
8	Optimisation of biodiesel fuel production from pongame Oil (2019)