MOHD MOIZ KHAN, Ph.D.

Assistant Professor
Department of Chemical Engineering, National Institute of Technology, Srinagar-190006
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Research Interest

- ✓ Waste to Resources Recovery
- ✓ Biofuel and Biodiesel Production
- ✓ Chemical Reaction Engineering
- ✓ Circular Economy

Education

Doctor of Philosophy: Chemical Engineering, IIT Bombay, India, July 2020. (**RGM PhD excellence award)**

Thesis: Reclamation of Waste Foundry Sand

Supervisor: Prof. Sanjay M. Mahajani

Master of Technology: Petroleum Studies, AMU Aligarh, India, June 2015. (**University Gold Medalist)**

Dissertation: Biodiesel production from Jatropha oil using blends of Tetrahydrofuran and Acetone as co-solvent

Supervisor: Dr. Moina Athar

Bachelor of Technology: Chemical Engineering (First Division)**,** Aligarh Muslim University Aligarh, India. May 2013.

PROFESSIONAL EXPERIENCE

- Assistant Professor, National Institute of Technology Srinagar, India *Aug'22*- Present
- Post-Doctoral Researcher in Chemical Engineering Department, IIT Bombay, India. *Mar'21- Jul'22*
- Served as a Project Research Associate on project *synthesis of value-added products from dimethyl ether*, IIT Bombay, India. *Sep'20- Feb'21*
- Served as a Project Research Associate on project *gasification process for high ash biomass*, IIT Bombay, India. *Jun'15- Sep'15*
- Served as a Project Research Associate on project *CFD modelling and Simulation of Chemical vapor deposition reactor for production of high purity silicon ingots*, IIT Bombay, India. *Sep'15- Dec'15*

RESEARCH GRANT PROPOSALS

- PI: Mahajani, S., M. Khan, M., M. 2021. Thermal reclamation of waste foundry sand: Prototype development and demonstration. Nidhi Prayas, Department of Science and Technology, Government of India. **(Granted)** *Dec' 21*

- PI: **Khan, M., M.** *Biodiesel production from microalgae cultivated in industrial effluent***.** 2022. Dr. D. S. Kothari Research Grant for Newly Recruited Faculty Members, University Grants Commission New Delhi-110 002. (Proposal submitted) *Feb'23*
- PI: Khan, M., M. *Analysis and process design for reclamation of waste foundry sand using industrial effluent*. 2021. (Registration No.: TPN / 76372), Department of Science and Technology, Government of India. (Proposal submitted) *Oct' 21*
- PI: Mahajani, S., M. Khan, M., M. 2021. *Reclamation of all types of waste foundry sand: Technology Development and Demonstration on Pilot Scale.* Mahindra Group and Strategic Alliances Division Office of the Principal Scientific Adviser, Government of India. (Proposal submitted) *Dec' 21*

ACADEMIC HONORS/FELLOWSHIPS

- **Outstanding Researcher** Award, Asia International Research Awards, India *March'23*
- **Young Researcher** in Chemical Engineering Award, Venus International Foundation, India *Jan'23*
- RG Manudhane **PhD excellence** award, IIT Bombay, India *July'21*
- **Young Researcher** Award-2021, Centre for Education Growth and Research, India *Sep' 21*
- Outstanding Young Chemical Engineers Awards (**OYCE-2021**), IIChE-MRC, Mumbai *Sep' 21*
- Placed among the **top 10 entrepreneurs** in Asian University Alliance (AUA) Entrepreneurship competition, Tsinghua University, China *Dec' 20*
- Won **outstanding Innovator Award**, Indo-Korean Utsava (PRISM-2020), Christ University, Bengaluru, India *Oct' 20*
- Won the **best paper award** in Recycle 2020 national conference held at IIT Guwahati *Feb'20*
- Augmenting Writing Skills for Articulating Research (AWSAR) award, Department of Science and Technology, Govt. of India Jan'20
- Won the **first prize** in essay writing (amongst IITB students) during vigilance awareness week at IIT Bombay Jan'20
- Won the **best Innovator award**, Department of Science and Technology, Govt. of India at SR Engineering college, Warangal *Nov'19*
- International travel grant, Department of Science and Technology, Govt. of India *Nov'19*
- Won Excellence in research award in **Youth Conclave-3 (INAE)** at IIT Delhi *Aug'19*
- Shortlisted for final round in **Gandhian Young Technological Innovation Award** *Mar'19*
- Selected for **I-NCUBATE 3** program (entrepreneurial journey) by IIT Madras *Nov'18*
- Won the **best paper award** in SCHEMCON national conference held at ICT Mumbai *Nov'18*
- Selected for attending Asian University Alliance (AUA) youth forum meet at **Bali, Indonesia** *Oct'18*
- Won the **best paper award** in International conference on Mineral Processing Technology, IIT (ISM) Dhanbad, India. *Oct'18*
- Recipient of **Tata fellowship** during Ph.D. program *March'18*

- University **Gold Medal** recipient for master program at AMU, Aligarh, India *July'15*
- Recipient of **TEQUIP-II** fellowship during master program *Aug'13 - May'15*
- Nominated for research internship program at the University of **Wisconsin-Madison (USA)** *Jan'15*
- Won the **best paper award** in International Conference on emerging trends in engineering and technologies, New Delhi, India *April'13*

PATENTS

- **Khan M. M**., Singh M., Mahajani S.M., Jadhav G., N. A method and a device for reclaiming green waste foundry sand, Indian Patent No. 201721023693.
- **Khan M. M.,** Mahajani, S. M., Jadhav, G., N. A process for reclaiming waste foundry sand-A, Indian Patent Application No 202021020228.
- **Khan M. M.,** Mahajani, S. M., Jadhav, G., N. A process for reclaiming waste foundry sand-B, Indian Patent Application No 202021020229.

  Note: The concluded research turned out to be a startup named **"Deccan Crest Engineering Pvt. Ltd."**

PUBLICATIONS

- **Khan M. M**., Singh M., Mahajani S.M., Jadhav G.N., Mandre S. 2018. *Reclamation of used Green Sand in small scale foundries*. Journal of Materials Processing Tech. 255, 559–569. **(I.F – 6.1)**
- **Khan, M. M.,** Singh M. Mahajani. S., M. Jadhav, G., N. Mandre, S. 2020. Characterization of waste and reclaimed green sand used in foundry processing. Silicon, 12(3), 677-691. **(I.F-2.6)**
- **Khan, M. M.,** Mahajani, S.M., Jadhav, N., Vishwakarma, R., Malgaonkar, V., Shashank, M. 2021. Mechanical and thermal methods for reclamation of waste foundry sand. Journal of Environmental Management, Volume 279, 111628. **(I.F- 8.9)**
- **Khan, M. M.,** Mahajani, S.M., Jadhav, N., Vishwakarma, R., Malgaonkar, V., Shashank, M. 2021. A multistakeholder approach and techno-economic analysis of a mechanical reclamation process for waste foundry sand in the Indian context. Resources, Conservation & Recycling, Volume 167, 105437. **(I.F-13.7)**
- **Khan, M. M.,** Mahajani, S.M., Jadhav, N. G. 2021. Transformation of bentonite used in green sand molds during metal casting process and its relevance in sand reclamation. Journal of Applied Clay Science, Volume 206, 106072. **(I.F- 5.9)**
- **Khan, M. M.,** Mahajani, S.M., Jadhav, G. N., Vishwakarma, R., Malgaonkar, V. 2021. Determination of recycle potential in waste green foundry sand through spatiotemporal analysis of sand mold. Journal of cleaner Engineering and Technology, Volume 5, 1000329.

CONFERENCES

- **Khan M. M.**, Jadhav G.N, Mahajani S.M. *Innovative Sand Reclamation Technology for the Sustainable Growth of Foundries*. Recycle-2020, 13-14 Feb. 2020, IIT Guwahati, Assam, India.

- **Khan M. M.**, Jadhav G.N, Mahajani S.M. *Techno-commercial analysis of recycling of waste foundry sand based on mechanical attrition*. XVIII International conference on Mineral Processing Technology, 16-18 Dec. 2019, Hyderabad, Telangana, India.
- **Khan M. M.**, Jadhav G.N, Mahajani S.M. *Reclamation of molding sand: A Chemical approach to recycle waste foundry sand*. **Recycling and waste management-19, 5-6 Dec. 2019, New York, USA**.
- **Khan M. M.**, Jadhav G.N, Mahajani S.M. Murty, D., S. *Comparative study of waste foundry sand reclamation techniques.* **World foundry congress, 23-27 Sep. 2018, Poland.**
- **Khan M. M.**, Jadhav G.N, Mahajani S.M. *Chemical and mechanical reclamation of waste foundry sand*. Chemcon, 26-30 Dec. 2018, Jalandhar, Punjab, India.
- **Khan M. M**., Vithoba M. *Chemical reclamation of waste foundry sand.* Schemcon, 23 Nov. 2018, ICT, Matunga, Mumbai, India.
- **Khan M. M**., Jadhav G.N, Mahajani S.M. *Mechanical and thermal treatment of waste foundry sand.* XVII International conference on Mineral Processing Technology, 8-10 Oct. 2018, IIT (ISM) Dhanbad, India.
- **Khan M. M**., Jadhav G.N., Singh M., Mahajani S.M., Mandre, S. *Classification of Indian foundry sand.* XVI International conference on Mineral Processing Technology, 1-3 Feb.2017, Chennai, India.
- **Khan M. M**., Singh M., Mahajani S.M., Jadhav G.N., Mandre, S. *Reclamation of waste foundry sand.* XVI International conference on Mineral Processing Technology, 1-3 Feb.2017, Chennai, India.
- **Khan M. M**. *Production of Biodiesel by Heterogeneous Catalyst*. International conference on Chemical Engineering-Emerging dimensions and Challenges ahead (CHEMCON-2014), held at Institute of Chemical Engineering & Technology, Panjab University, Chandigarh, India.
- **Khan M. M**, Athar M. *Production of Biodiesel by Nano sized Heterogeneous Catalyst-A review* .National conference on Nanotechnology and Renewable energy (NCNRE-14) 28-29th April 2014, JMI, New Delhi, India.
- **Khan M. M**, Athar M. *Nano Catalyst for Biodiesel Production*. National Symposium on Chemistry under SAP (DRS-I) 22nd march 2014, Deptt. Of Chemistry, ZHCET.AMU, Aligarh (UP), India.

EDITOR/REVIEWER

❖ **Editor**

- Sustainable Chemical Engineering (SCE) International journal, Universal wiser publisher
- Organic Chemistry Plus (OCP) International journal, Universal wiser publisher

❖ **Reviewer**

- International Journal of Cast Metals Research (Taylor & Francis)
- Waste Management (Elsevier)
- Environmental Science and Pollution Research (Springer)
- International Journal of Metal casting (Springer)

BOOK AUTHORED

- **WORLD OF BIODIESEL** (Feasibility of Biodiesel with Petro diesel), 2014, LAP LAMBERT Academic Publishing **(Germany)** ISBN: 978-3-659-21860-6, Pp.125**.**

MEMBERSHIPS

- Life associate member of Indian Institute of Chemical Engineers (Membership no: - LAM-41101)
- Member of Indian Institute of Mineral Engineers **(IIME)** (Membership no: - LM-1358)
- Member of Institute of Indian Foundrymen **(IIF)** (Membership no: - SM/15294/W/GBM)
- Life time member of Centre for Education Growth and Research (CEGR) (Membership no: - LT-1141)

INDUSTRIAL VISITS

FOUNDRY CLUSTERS (KOLHAPUR, RAJKOT, COIMBATORE, JALANDHAR) *Nov'18- Jan'19*

Plan of action	▪ To understand the foundry process and their major challenges
Description	▪ Visited the whole plant and learnt the functions of different units of the plant ▪ Conducted interviews with foundry owner/manager ▪ Integrated a comprehensive report on the **ecosystem of the plant** and **their challenges** ▪ Major areas have been highlighted where **innovations** are required
Impact	▪ Got the plant level experience of complete process and about the foundry waste generation ▪ Innovative ideas were sparked for making more efficient foundry process and feasible solutions for proper utilization generated foundry waste

INTERNSHIPS

Department of Chemical Engineering, IIT Bombay| *Prof. Sanjay Mahajani* *Feb'15-June'15*

Plan of action	▪ Study about the gasification process for high ash biomass
Description	▪ Characterization of high ash feed-stocks for gasification ▪ Parametric study for identification of issues while using available commercial gasifiers
Impact	▪ Learnt the process of gasification for different feedstock ▪ Field trials are done for pilot gasifier in the canteen at IIT Bombay

WORKSHPS /SYMPOSIUM ATTENDED

- National seminar titled *"Digital Solutions in the Process Industries"* held at IIT Bombay, India. *March'19*
- National seminar on *Chemicals from Indigenous Coal: Opportunities and Challenges* held at IIT Bombay, India. *Feb'18*
- Two days workshop on *Process Modeling and Simulation* held at department of chemical engineering Z.H College of Engineering and Technology, Aligarh Muslim University, Aligarh, India. *March'13*
- National Symposium on *Nanotechnology for Chemical Applications* held at Z.H. College of Engineering and Technology, Aligarh Muslim University, Aligarh, India. *Feb'13*
- Attended the workshop on Industrial safety and **5s concept** in National Small Industries Corporation Ltd. (Government of India Enterprises, Aligarh, India). *March'12*

POSITION OF RESPONSIBILITY

B. TECH (FIRST YEAR) FACULTY COORDINATOR |NIT SRINAGAR, *India* *Jan'23*

COORDINATOR, TECHNICAL, CHEMFERENCE-18 | *Inter IIT Chemical Engineering conference* *May'18*

- Managed the whole technical programs for all performances with 20 organizers

VOLUNTEER, CONVOCATION-19 | *IIT Bombay, India* *Aug'19*

- Managed all logistics related issues during the convocation with 54 members

VOLUNTEER, CONVOCATION-18 | *IIT Bombay, India* *Aug'18*

- Managed all logistics related issues during the convocation with 40 members

HEAD, GRIEVANCE COMMITTEE | *AMU, Aligarh, India* *July'14- May'15*

- Entertaining all academic grievances in the department of petroleum studies at AMU with 5 committee members

TEAMWORK AND LEADERSHIP EXPERIENCE

- Served as an **Entrepreneurial lead** for sand reclamation team in the I-NCUBATE program which was hosted by IIT Bombay and organized by IIT Madras. *Nov'18- Jan'19*
- A total **107 interviews** were conducted through I-NCUBATE program across the country with the help of 8 team members. *Nov'18- Jan'19*

EXTRACURRICULAR ACTIVITIES

Academic Activity	▪ Invited for technical talk on waste foundry sand reclamation in Kolhapur, India as organized by Ministry of Micro, small and Medium Enterprises, Govt. of India. *March'19* ▪ Appointed as an external examiner for end semester examination in Tatyasaheb Kore Institute of Engineering & Technology, Kolhapur, India *April'18*
Sport Activity	▪ Winner in Cricket at district level in 2005-2006.
Teaching Assistantship	▪ Final year undergraduate lab (CL 433, MT-401: Mass transfer operations) *Jan'16* ▪ First year post graduate lab (CL 610: Experimental methods) *Jul'16* ▪ Third year undergraduate theory course (CL356: Process plant utilities) *Jan'17* ▪ First year post graduate lab (CL 610: Experimental methods) *Jul'17*
Skills	**LANGUAGES:** English, Hindi, and Urdu **WEB TOOLS:** Microsoft Office, MS-Excel, Adobe Acrobat, Adobe Photoshop, MATLAB, Latex, COMSOL Multiphysics®, Python **OPERATING SYSTEM:** Windows