

## Dr. Kuldeep Roy (Chemical Engineering)

**Soft Skills:** Excellent

### Specialization

**M.Tech:** Computational fluid dynamics

**Ph.D:** Water Treatment and cavitation

### Area of Interest

**Research:** Modelling and Simulation, Nanoparticles Synthesis, Cavitation, Advanced Oxidation Processes (AOPs), biodegradation, Density-functional theory (DFT).

### Participated - National and International Conferences:

1. **Kuldeep Roy** and Vijayanand S. Moholkar, Degradation of Sulfadiazine in Hydrodynamic Cavitation Assisted Fenton/Persulfate System: A Kinetic Modelling Approach. *Fourth International Conference on Sustainable Energy & Environmental Challenges (IV SEEC)*, 27-29<sup>th</sup> November 2019, CSIR-National Environmental Engineering Research Institute, Nagpur, Maharashtra, India. (**Best Oral Presentation, ACS Sustainable Chemistry & Engineering**)
2. **Kuldeep Roy** and Vijayanand S. Moholkar, Comparative Study of Acoustic and Hydrodynamic Cavitation for the Degradation of Nile Blue Sulphate Dye: A Kinetic Modelling Approach. *Annual Symposium of Chemical Engineering (Reflux 7.0)*, 28-29<sup>th</sup> September 2019, Indian Institute of Technology Guwahati, Assam, India. (**Best Oral Presentation**)
3. **Kuldeep Roy** and Vijayanand S. Moholkar, Mechanistic investigation in sulfadiazine degradation using heterogeneous catalyst and hydrodynamic cavitation. Proceeding of *14<sup>th</sup> International Conference on Gas-Liquid and Gas-Liquid-Solid Reactor Engineering (GLS-14)*, 30<sup>th</sup> May-03<sup>rd</sup> June 2019, Grand Link Hotel, Guilin, **China**.
4. **Kuldeep Roy** and Vijayanand S. Moholkar, Intensified degradation of 4-nitrophenol using hydrodynamic cavitation in the presence of heterogeneous Fenton-like catalyst. Proceeding of *Indo-Japan Bilateral Symposium (IJBS)*, 01-04<sup>th</sup> February 2018, Indian Institute of Technology Guwahati, Assam, India.
5. Arup Jyoti Borah, Mriganka Saha, Prachi Arya, **Kuldeep Roy**, Arun Goyal, Vijayanand S. Moholkar, Immobilization of cellulase on Magnetic Nano particles for cost effective hydrolysis of lignocellulosic biomass. *5<sup>th</sup> International Conference on Advanced Nanomaterials and Nanotechnology (ICANN)*, 18-21<sup>th</sup> December 2017, Indian Institute of Technology Guwahati, Assam, India (**Best Poster**).
6. **Kuldeep Roy**, Ritesh S. Malani, Binota Thokchom, and Vijayanand S. Moholkar, Ultrasound-Assisted Degradation of Sulfadiazine Using Rattles-Type/Yolk Shell Structured Magnetic Particles: A Mechanistic Investigation. Proceeding of *3<sup>rd</sup> Asia-Oceania Sonochemical Society Conference (AOSS-3)*, 14-16<sup>th</sup> September 2017, SRM Research Institute, SRM University, Kattankulathur, Chennai, Tamil Nadu, India.

7. **Kuldeep**, Jitendra Carpenter, and Virendra Kumar Saharan, Study of Cavity dynamics in a Hydrodynamic Cavitation Reactor. Proceeding of 3<sup>rd</sup> *International Conference on Energy Technology, Power Engineering & Environmental Sustainability (3<sup>rd</sup> ETPEES-2014)*, 18-19<sup>th</sup> October 2014, Jawaharlal Nehru University, New Delhi, India.

#### **Publication - Books / Chapters / Papers / Articles / Blogs:**

1. **Kuldeep Roy**, Vijayanand S. Moholkar. "Carbamazepine Degradation by Hybrid Advanced Oxidation Process: Kinetic Modelling and Mechanistic Analysis with Density Functional Theory" (Under review).
2. **Kuldeep Roy**, Vijayanand S. Moholkar. "Mechanistic insight for the degradation of 4-Nitrophenol using Hydrodynamic Cavitation assisted Heterogeneous Fenton System: Experimental and Computational Studies" (Under review).
3. Niharika Kashyap, **Kuldeep Roy**, Vijayanand S. Moholkar. "Mechanistic Investigation in Co-biodegradation of Phenanthrene and Pyrene by *Candida tropicalis* MTCC 184." *Chemical Engineering Journal*, 399, 125659 (2020).
4. **Kuldeep Roy**, Chandrodai Agarkoti, Ritesh S. Malani, Binota Thokchom, Vijayanand S. Moholkar. "Mechanistic study of sulfadiazine degradation by ultrasound-assisted Fenton-persulfate system using yolk-shell  $\text{Fe}_3\text{O}_4@hollow@m\text{SiO}_2$  nanoparticles" *Chemical Engineering Science*, 217 115522 (2020).
5. Amit H. Batghare, **Kuldeep Roy**, Vijayanand S. Moholkar. "Investigations in physical mechanism of ultrasound-assisted antisolvent batch crystallization of lactose monohydrate from aqueous solutions." *Ultrasonics Sonochemistry*, 67, 105127 (2020).
6. **Kuldeep Roy**, Vijayanand S. Moholkar. "Sulfadiazine Degradation using Hybrid AOP of Heterogeneous Fenton/Persulfate System Coupled with Hydrodynamic Cavitation" *Chemical Engineering Journal* 386 121294 (2020).
7. Niharika Kashyap, **Kuldeep Roy** and Vijayanand S. Moholkar "Mechanistic investigations in ultrasound-assisted biodegradation of phenanthrene" *Ultrasonics Sonochemistry*, 104890 (2020).
8. Amit H. Batghare, **Kuldeep Roy**, Kaustubh C. Khaire, and Vijayanand S. Moholkar. "Mechanistic investigations in ultrasound-induced intensification of fermentative riboflavin production." *Bioresource Technology Reports*, 100380 (2020).
9. Neha Singh, **Kuldeep Roy**, Arun Goyal, and Vijayanand S. Moholkar. "Investigations in ultrasonic enhancement of  $\beta$ -carotene production by isolated microalgal strain *Tetrademus obliquus* SGM19" *Ultrasonics sonochemistry*, 58, 104697 (2019).
10. Arup J. Borah, **Kuldeep Roy**, Arun Goyal, Vijayanand S. Moholkar. "Mechanistic investigations in biobutanol synthesis via ultrasound-assisted ABE fermentation using mixed feedstock of invasive weeds" *Bioresource Technology*, 272, 389-397 (2019) (**Featured Cover**).
11. Amit H. Batghare, Saiprasad Pati, **Kuldeep Roy**, Vijayanand S. Moholkar. "Mechanistic investigations in ultrasound-assisted extraction of astaxanthin from *Phaffia rhodozyma* MTCC 7536" *Bioresource Technology Reports*, 4, 166-173 (2018).
12. Belachew Z. Tizazu, **Kuldeep Roy**, Vijayanand S. Moholkar. "Ultrasonic enhancement of xylitol production from sugarcane bagasse using immobilized *Candida tropicalis* MTCC 184" *Bioresource Technology*, 268, 247-258 (2018).
13. Belachew Z. Tizazu, **Kuldeep Roy**, Vijayanand S. Moholkar. "Mechanistic Investigations in Ultrasound-Assisted Xylitol Fermentation" *Ultrasonics Sonochemistry*, 48, 321-328 (2018).

14. Gazliya Nazimudheen, **Kuldeep Roy**, Thirugnanasambandam Sivasankar and Vijayanand S. Moholkar. “Mechanistic investigations in ultrasonic pretreatment and anaerobic digestion of landfill leachates” *Journal of Environmental Chemical Engineering*, 6(2), 1690-1701 (2018).
15. Sandip K. Pawar, Amit V. Mahulkar, Aniruddha B. Pandit, **Kuldeep Roy**, Vijayanand S. Moholkar. “Sonochemical Effect Induced by Hydrodynamic Cavitation: Comparison of Venturi/Orifice Flow Geometries” *AIChE Journal*, 63(10), 4705–4716 (2017).
16. Ritesh S. Malani, Shubham Patil, **Kuldeep Roy**, Sankar Chakma, Arun Goyal, Vijayanand S. Moholkar. “Mechanistic analysis of ultrasound-assisted biodiesel synthesis with Cu<sub>2</sub>O catalyst and mixed oil feedstock using continuous (packed bed) and batch (slurry) reactors” *Chemical Engineering Science*, 170, 743-755 (2017).
17. **Kuldeep**, Virendra K. Saharan, “Computational study of different venturi and orifice type hydrodynamic cavitating devices”. *Journal of Hydrodynamics, Ser. B*, 28(2), 293-305 (2016).

**Total Citations (Google Scholar) = 179, h-index = 9 (as on April 12, 2021).**