



# UNIVERSITY OF CALCUTTA

## FACULTY ACADEMIC PROFILE/ CV



1. **Full name of the faculty member:** DR. SANJIB BARMA
2. **Designation:** Assistant Professor-II
3. **Specialisation :** Chemical Engineering
4. **Contact information :**  
Department of Chemical Technology (Room No **CT 102A**)  
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5. **Academic qualifications:**

College/ university from which the degree was obtained	Abbreviation of the degree
Jadavpur University	BE
Jadavpur University	ME
Indian Institute of Technology, Guwahati	PhD

6. **Positions held/ holding:**

- Life member of Indian Institute of Chemical Engineers (IChE) (LM 67100)
- Executive Council Member of Calcutta Regional Centre (CRC) of IChE (2023-2025).

7. **Research interests:**

- Membrane technology (ceramic & polymeric membrane synthesis and application)
- Adsorption technology (Silica, zeolite synthesis and application in CO<sub>2</sub> capture, protein separation)
- Waste water treatment
- Plastic waste management

8. **Research guidance:**

Number of researchers awarded M.Tech degrees: **Three**

Number of researchers pursuing PhD : **Four**

Number of B.Tech Projects Completed: **Eighteen**

9. **Other Research Activity:** Working as a mentor for National Post-Doctoral Fellow (NPDF) (one) of the project “Studies on CO<sub>2</sub> selective functionalized ordered mesoporous silica membrane development for CO<sub>2</sub> capture from flue gas”

10. **Selected list of publications:**

a) *Journals (selected)*

1. Effects of sintering temperature and initial compaction load on alpha-alumina membrane support quality. *Ceramics International*. 2014, 40, 11299–11309.
2. Synthesis and characterization of ordered mesoporous silica membrane: role of porous support and gas permeation study. *Microporous & Mesoporous Materials*. 2015, 210, 10-19.
3. Modeling and simulation for post-combustion carbon dioxide capture from power plant flue gas with economic analysis. *Separation Science & Technology*. 2015, 50, 1952-1963.
4. Somjyoti Basak, **Sanjib Barma**, Swachchha Majumdar Sourja Ghosh, “Role of silane grafting in the development of a superhydrophobic clay-alumina composite membrane for separation of water in oil emulsion” *Ceramics International*, Volume 48, Issue 18, 15 September 2022, Pages 26638-26650.
5. Somjyoti Basak, **Sanjib Barma**, Swachchha Majumdar Sourja Ghosh, “Silane-modified bentonite clay-coated membrane development on ceramic support for oil/water emulsion separation using tuning of hydrophobicity” *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, Volume 681, 2023, Pages 132812.
6. Zinnia Chowdhury, **Sanjib Barma**, Aparna Ray Sarkar, Dwaipayan Sen, “PET pyrolysis: Kinetics of a-graphite” *Environmental Quality Management*, Volume 33, 2023, Pages 843.
7. Debanik Bose, Aritra Bangal, Abhiram Hens and **Sanjib Barma**, “Design and optimization of reactive distillation for enhancing supercritical trans esterification process to produce bio-diesel” *Chemical Engineering and Processing - Process Intensification*, Volume 203, 2024, Pages 109877.
8. Zinnia Chowdhury, Sk Samrat, **Sanjib Barma**, “Synthesis, characterization and modification of costeffective kaolin supported hydrothermally fabricated mesoporous silica membrane” *Journal of Physics: Conference Series*, Volume 2818, 2024, Pages 012030.

b) *Books/ book chapters :*

1. Zinnia Chowdhury, **Sanjib Barma**, Aparna Ray Sarkar, Dwaipayan Sen, “Chapter 7 - Sustainable membranes with FNMs for biomedical applications”, *Membranes with Functionalized Nanomaterials Current & Emerging Research Trends in Membrane Technology*, Elsevier, 2022, Pages 205-244.
2. Sambit Dutta, **Sanjib Barma**, Aparna Ray Sarkar, Dwaipayan Sen “Chapter Seven - Ammonia recovery from salty liquids (ammonium solution, urea, etc.)”, *Progresses in Ammonia: Science, Technology and Membranes Production and Separation*, Elsevier, 2024, Pages 225-274.

c) **Conference Proceedings (Full Paper):**

1. **Sanjib Barma**, Bishnupada Mandal, "Experimentation with Thermally Stable Mesoporous Silica Powder and Its CO<sub>2</sub> Adsorption" **Proceedings of International Conference on Thermofluids, Springer**, 2021, Pages 613-620.

d) *Conference/ seminar presentations (selected)*

1. "Synthesis and Characterisation of MCM-48 Coated Inorganic Membrane for CO<sub>2</sub> / N<sub>2</sub> Separation"- International Conference on "Membranes and Applications" (ICMA 2013), Nov 2013, CGCRI Kolkata, INDIA.
2. "Comparative study of the properties of MCM 48 synthesized by room temperature method with other synthesis methods and the overall feasibility of such adsorbents."-"The Indian Chemical Engineering Congress" (CHEMCON 2013), Dec 2013, Chandigarh, INDIA.
3. "Synthesis and Characterization of MCM-48 Materials at Different Aging Time"- "The Indian Chemical Engineering Congress" (CHEMCON 2012), Dec 2012, Jalandhar, INDIA.
4. "Synthesis and Characterization of Thin-Film Composite Polymeric Membrane Containing Amine Carrier."- "The Indian Chemical Engineering Congress" (CHEMCON 2012), Dec 2012, Jalandhar, INDIA.
5. "Gas Separation by Inorganic Composite Membrane"- Twenty First International Symposium on "Processing and Fabrication of Advanced Materials" (PFAM XXI 2012), Dec 2012, IIT Guwahati, INDIA.
6. "Synthesis and Characterization of ordered mesoporous silica membrane by spin coating method on  $\alpha$ -alumina support" – "CSChE 2014", October 2014, Niagara Falls, Canada.
7. "A Comparison study between the solvent extraction and the calcination method for the removal of surfactant from MCM 41"- IMST 2018, Dec 14-16,2018, Amity University, Kolkata, India.
8. "Preparation and Characterization of Kaolin based cost-effective MCM 41 membrane"- IMST 2018, Dec 14-16, 2018, Amity University, Kolkata, India.
9. "Development of a modified bentonite composite membrane for separation of polycyclic aromatic hydrocarbon (PAH) from sundarban coastal area ground water"-CHEMCON 2021, Dec 26-30, Bhubaneswar, India.
10. "Silane modification of kaolin clay coated ceramic hydrophobic membrane for oil-water separation"-ACMS 2022. April 14-16, HIT, Kolkata, India.
11. "Effect of silane-modified clays in ceramic supported hydrophobic composite membrane development and their performance in emulsified oil-water separation." CHEMCON 2023, Dec 26-30, HIT, Kolkata India.
12. "Remediation of chromium ions from wastewater using pyrolytic char doped ceramic membrane". TECHNOSCAPE 2023, Dec 14-16, Vellore, India.