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**Engineering**

B.Tech. , Calcutta University, 1994  
M.Tech Calcutta University, 1996  
Ph.D., Jadavpur University, 2003  
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### Current Research

- **Emulsion liquid membrane**

Compared to conventional separation processes, liquid membrane processes have certainly some attractive features e.g. simple operation, high efficiency, extraction and stripping in single stage, larger interfacial area, scope of continuous operation. The focus is on the extractions as well as permeation rate of different heavy metals, hydrocarbons and biocompounds using ELM and also competitive transports of the two or multicomponent mixture and modelling of the system.

- **Ionic liquid membrane**

Ionic liquids have very low vapour pressure and a very high boiling temperature and are therefore a potentially environmentally friendly solvent. Room-temperature ionic liquids have been used as a liquid membrane for separation of aromatics from aliphatic. Intention behind the work is two-fold. Firstly, applications of the bulk as well as supported ionic liquid membrane (SILM) technique is investigated for separation of aromatics from aliphatics, using different imidazolium ionic liquids, which are less toxic and cheaper in comparison with commonly reported ionic liquids and effect of varying experimental parameters are studied to find out optimum condition.

- **Green Chemistry**

Microwave (MW) assisted organic synthesis offers the advantage of transformation of energy and heating throughout the volume efficiently in a shorter period and eliminates the use of excess solvent during the course of reaction. The present study aims to assess the conversion and selectivity for the production of different sulphonated and acetylated compounds using microwave irradiation. Advantages like reduction in reaction time, reduced wastage in effluent and increase in conversion along with enhanced selectivity are the chief observations.

### Research Project :

- Worked as a **Co-investigator** in the project “Hydrogenation of carbon-dioxide” **MHRD (R&D)**.

- Worked as a **Principal-investigator** in the project “Multicomponent metal extraction from wastewater by liquid surfactant membrane” **AICTE (R&D)**.

### **Achievements**

- Worked as a Post Doctoral Fellow ( **Humboldt Fellowship**) in the Department of Mechanical and Process Engineering at the University of Kaiserslautern, Germany under the guidance of Dr H.J.Bart from August 4, 2004 to September 30, 2005
- **Reviewers** of the **two** (Journal of Colloids and Surfaces A: Physicochemical and Engineering Aspects, Journal of Membrane Science) **international Journals**.

### **No of Publications:**

**International Journal: 10, International conference: 3**

National Journal: 28, National Conference: 8

### **Selected Publications**

1. Mousumi Chakraborty, Chiranjib Bhattacharya and Siddhartha Datta, Effect of drop size distribution on mass transfer analysis of the extraction of nickel (II) by emulsion liquid membrane, **Journal of Colloids and Surfaces A: Physicochemical and Engineering Aspects**, 224 (2003) 65 -74.
2. Mousumi Chakraborty, Chiranjib Bhattacharya and Siddhartha Datta, Studies on the applicability of artificial neural network (ANN) in emulsion liquid membranes, **Journal of Membrane Science**, 220 (2003) 155 -164.
3. Mousumi Chakraborty, Chiranjib Bhattacharya and Siddhartha Datta, Mathematical modeling of simultaneous copper (II) and nickel (II) extraction from wastewater by emulsion liquid membranes, **Separation Science and Technology**, 38 (9) (2003) 2081-2106.
4. Mousumi Chakraborty, Chiranjib Bhattacharya and Siddhartha Datta, Study of the stability of (w/o)/w-type emulsion during the extraction of nickel (II) via emulsion liquid membrane, **Separation Science and Technology**, 39 (2004) 1-17.
5. Mousumi Chakraborty and Hans-Jörg Bart, Separation of toluene and n-heptane using Ag<sup>+</sup>-containing emulsion liquid membranes, presented at **DECHEMA/GVC “Extraction”** March 7-

8 (2005), **Frankfurt, Germany**.

6. Mousumi Chakraborty, Z.V.P.Murthy, Chiranjib Bhattacharya and Siddhartha Datta, Process Intensification: Extraction of Chromium (VI) by Emulsion Liquid Membrane, **Separation Science and Technology**, 40 (2005) 2353-2364.
7. Mousumi Chakraborty and Hans-Jörg Bart, Separation of toluene and n-heptane using  $\text{Ag}^+$ -containing emulsion liquid membranes, **Chemical Engineering & Technology** 28 (2005)1-7.
8. Mousumi Chakraborty and Hans-Jörg Bart, Emulsion liquid membranes: role of internal droplet size distribution on toluene/n-heptane separation, **Journal of Colloids and Surfaces A: Physicochemical and Engineering Aspects** 272 (2006)15-21.
9. Mousumi Chakraborty and Hans-Jörg Bart, A novel method improving low separation performance of toluene from n-heptane via emulsion liquid membranes containing substituted cyclodextrins as carriers, presented paper in **AFS 19<sup>th</sup> Annual 2006 Conference & Exposition**, May 9-11 (2006) **Rosemont, IL, USA**.
10. Mousumi Chakraborty, Petya Ivanova-Mitseva, Hans-Jörg Bart, Selective separation of toluene from n-heptane via emulsion liquid membranes containing substituted cyclodextrins as carriers, **Separation & Science Technology**, 41 (2006) 3539 - 3552.
11. Mousumi Chakraborty and Hans-Jörg Bart, Highly selective and efficient transport of toluene in bulk ionic liquid membranes containing  $\text{Ag}^+$  as carrier, paper accepted by **Fuel Processing and Technology** 88 (2007) 43-49.
12. Mousumi Chakraborty, Vaishali Umrigar and P.A. Parikh, Microwave assisted sulfonation of 2-Naphthol by Sulfuric acid: Cleaner production of Schaeffer's acid, accepted by **Industrial & Engineering Chemistry Research** (2007)