



Mousumi Chakraborty

Associate Professor
Department of Chemical Engineering
Postdoc, Humboldt Fellowship, Germany, 2005
Ph.D., Jadavpur University, 2003
M.Tech., Calcutta University, 1996
B.Tech., Calcutta University, 1994
Working with SVNIT since December, 1996

RESEARCH AREA:

- **Nano materials:** Synthesis by Mechanochemical, Ball milling, Sonochemical and Microemulsion technique and application of nanomaterials as catalyst and fuel additives.
- **Green Chemistry:** Ionic liquid as a membrane or solvent & catalyst for organic synthesis, Microwave assisted organic synthesis.
- **Separation Processes:** Emulsion liquid membrane & supported liquid membrane for separation of heavy metals, hydrocarbons and bio compounds etc.
- **Wastewater Treatment:** Advanced Oxidation Process like UV treatment, Ozonation, Sonication, Microwave assisted digestion etc.

PUBLICATIONS:

- International Journal: 66 Conferences: 07
- National Journal: 35 Conferences: 25

RESEARCH PROJECT:

- **BRNS** grant (Rs. 26.5 Lacs) for "**Synthesis of alumina supported ruthenium nanocatalyst for studies on feasibility in application to hydrogenation of benzo crown compound**" (Principal Investigator, 2011-14)
- **DST R & D** grant (Rs 5.76 Lacs) for "**Synthesis of alumina supported ruthenium nanocatalyst using microemulsion technique**" (Principal Investigator, 2010-12).
- **AICTE (R&D)** grant (Rs.4.8 Lacs) for "**Multicomponent metal extraction from wastewater by liquid surfactant membrane**" (Principal Investigator, 2003-06)
- **MHRD R & D** grant (Rs 4.00 Lacs) "**Hydrogenation of carbon-dioxide**" (Co-Investigator, 2000-02).

ACHIEVEMENTS:

- Worked as a Post Doctoral Fellow (**Humboldt Fellowship**) in the Department of Mechanical and Process Engineering at the University of Kaiserslautern, Germany in 2004-05.
- **Humboldt Re-invitation Fellowship**, University of Kaiserslautern, Germany, April 15, 2009 to June 15, 2009.
- **Reviewer** of 15 Peer Reviewed International/National Journals in the field of Chemical Engineering and Separation Techniques.

POST GRADUATE STUDENTS:

- M. Tech. Dissertations Guide: 18 (completed)
- Ph.D. Supervisor: 7 (completed) & 4 (ongoing)

MEMBERSHIPS IN PROFESSIONAL BODIES:

- Life Member of Indian Institute of Chemical Engineers (IChE).
- Life Member of Indian Society of Technical Education (ISTE).
- Life Member of the Society for Advancement of Electrochemical Science and Technology (SAEST).
- Life Member of The Institution of Engineers (India)

SELECTED PUBLICATIONS:

BOOK CHAPTER

1. Mousumi Chakraborty, Chiranjib Bhattacharya and Siddhartha Datta, **“Emulsion liquid membranes: definitions and classification, theories, module design, applications, new directions and perspectives”** (2009) 141-199 in the book “Liquid Membrane” Elsevier, Netherlands.
2. Smita Gupta, Mousumi Chakraborty and Z.V.P.Murthy, **MEMBRANE SEPARATIONS: Liquid Membranes: An Overview**, Elsevier Reference Module in Chemistry, Molecular Sciences and Chemical Engineering, edited by Jan Reedijk, Waltham, MA: Elsevier. 29-Nov-2013 doi:10.1016/B978-0-12-409547-2.05832-7.

PUBLICATION IN JOURNALS & INTERNATIONAL CONFERENCES

2015

1. Raji V., Mousumi Chakraborty and P. A. Parikh, Room temperature benzaldehyde oxidation using air over gold-silver nanoalloy catalysts, **Journal of the Taiwan Institute of Chemical Engineers**, 50(2015) 84-92 (Impact Factor: 2.637/2013).
2. C.M. Patel, Mousumi Chakraborty and Z. V. P. Murthy, Influence of pH on the stability of alumina and silica nanosuspension produced by wet grinding, **Particulate Science and Technology**, 33(2015)240-245 (Impact Factor: 0.523/2015).
3. R. R. Patel, J. M. Barad, S.U. Nandanwar, Mousumi Chakraborty, A. A. Dabbawala, P. A. Parikh and H.C.Bajaj, Cellulose supported ruthenium nanoclusters as an efficient and recyclable catalytic system for Benzene Hydrogenation under mild conditions, **Kinetics and Catalysis**, 56(2015)173-180 (Impact Factor: 0.758/2014).

4. S. U. Nandanwar, J. M. Barad, S. Nandwani and Mousumi Chakraborty, Optimization of process parameters for ruthenium nanoparticles synthesis by (w/o) reverse microemulsion, **Applied Nanoscience**, 2015 (DOI 10.1007/s13204-014-0321-6).
5. S. U. Nandanwar, A. A. Dabbawala, Mousumi Chakraborty, H. C. Bajaj, S. Mukhopadhyay and K. T. Shenoy, Partial hydrogenation of benzene to cyclohexene over Ru/Y-Al₂O₃ nanocatalyst via w/o microemulsion using boric acid and ethanolamine additives, **Research on Chemical Intermediates**, DOI 10.1007/s11164-015-2102-6 (Impact Factor: 1.22/2014).
6. A. N. Raut, Y. R. Suryawanshi, S.U. Nandanwar, Mousumi Chakraborty, S. Jauhari, S. Mukhopadhyay, K. T. Shenoy and H.C. Bajaj, Liquid phase selective hydrogenation of Phenol to Cyclohexanone over Ru/Y-Al₂O₃ nanocatalyst under mild conditions, accepted by **Kinetics and Catalysis** (Impact Factor: 0.758/2014).
7. P. Pokhalekar and Mousumi Chakraborty, Degradation of bisphenol A and 4-tert-octylphenol: a comparison between ultrasonic and photocatalytic technique, **Desalination and Water Treatment**, DOI:10.1080/19443994.2015.1041053 (Impact Factor: 1.173/2014).
8. Y. R. Suryawanshi, Mousumi Chakraborty, S. Jauhari, S. Mukhopadhyay, K. T. Shenoy Selective hydrogenation of Dibenzo-18-crown-6 ether over highly active monodispersed Ru/γ-Al₂O₃ nanocatalyst, **Bulletin of Chemical Reaction Engineering and Catalysis**, 10(1), 2015, 23-29.
9. R. N. Mehta, U. More, N. Malek, Mousumi Chakraborty, P. A. Parikh, Study of stability and thermodynamic properties of water-in-diesel nanoemulsion fuels with nano-Al additive **Applied Nanoscience**, 2015 (DOI 10.1007/s13204-014-0385-3).

2014

10. R. N. Mehta, Mousumi Chakraborty and P. A. Parikh, Impact of hydrogen generated by splitting water with nano-silicon and nano-aluminum on diesel engine performance, **International Journal of Hydrogen Energy**, 39 (2014) 8098-8105 (Impact Factor: 2.93/2012).
11. Rakhi Mehta, Mousumi Chakraborty and P. A. Parikh, Nanofuels: Combustion, Engine Performance and Emissions, **Fuel**, 120 (2014) 91-97 (Impact Factor: 3.35/2012)
12. Raji V., Mousumi Chakraborty and P. A. Parikh, Synthesis, Characterization and Application of Monodisperse Gelatin-Stabilized Silver Nanospheres in Reduction of Aromatic Nitro Compounds, **Colloid Journal**, 76 (2014) 12-18 (Impact Factor: 0.625/2010).
13. Jaydeep M. Barad and Mousumi Chakraborty, Reduction of 4-nitrophenol and 4-nitrobenzo 15 Crown with Colloidal Platinum Nanoparticles Synthesized by Microemulsion Technique, **Particulate Science and Technology**, 32 (2014)164-170 (Impact Factor: 0.545/2011).
14. Chetan M. Patel, Mousumi Chakraborty and Z.V.P. Murthy, Study on the Stability and Microstructural Properties of Barium Sulfate Nanoparticles Produced by Nanomilling, **Advanced Powder Technology**, 25 (2014) 226-235 (Impact Factor: 1.650/2012).
15. Smita Gupta, Mousumi Chakraborty and Z.V.P. Murthy, Performance Study of Hollow Fiber Supported Liquid Membrane System for the Separation of Bisphenol A from Aqueous Solutions, **Journal of Industrial and Engineering Chemistry**, 20(2014)2138-45 (Impact Factor: 2.145/2012).

16. Chetan M. Patel, Mousumi Chakraborty and Z.V.P. Murthy, Enhancement of Stirred Media Mill Performance by a New Mixed Media Grinding Strategy, **Journal of Industrial and Engineering Chemistry**, 20(2014)2111-18 (Impact Factor: 2.145/2012).
17. Chetan M. Patel, Mousumi Chakraborty and Z.V.P. Murthy, Preparation of Fenofibrate Nanoparticles by Combined Stirred Media Milling and Ultrasonication Method, **Ultrasonics Sonochemistry**, 21(2014)1100-07 (Impact Factor: 3.516/2012).
18. Raji V., Mousumi Chakraborty and P. A. Parikh, Hollow mesoporous silica spheres supported Ag and Ag-Au catalyzed reduction of 4-nitrobenzo-15-crown, **Journal of Industrial and Engineering Chemistry**, 20 (2014)767-774 (Impact Factor: 2.149/2010).

2013

19. Smita Gupta, Mousumi Chakraborty and Z.V.P. Murthy, Optimization of Process Parameters for Mercury Extraction Through Pseudo-emulsion Hollow Fiber Strip Dispersion System, **Separation and Purification Technology**, 114 (2013) 43–52 (Impact Factor: 2.894/2012).
20. S. U. Nandanwar, Mousumi Chakraborty, S. Mukhopadhyay and K. T. Shenoy, Benzene hydrogenation over highly active monodisperse Ru/ γ -Al₂O₃ nanocatalyst synthesized by (w/o) reverse microemulsion, **Reaction Kinetics, Mechanisms and Catalysis**, 108(2) (2013) 473-489 (Impact Factor: 0.557/2009).
21. Y. R. Suryawanshi, Mousumi Chakraborty, S. Jauhari, S. Mukhopadhyay, K. T. Shenoy and R. Shridharkrishna, Microwave Irradiation Solvothermal Technique: An optimized protocol for size-control synthesis of Ru nanoparticles, **Crystal Research and Technology**, 48, No. 2, 69–74 (2013) (Impact Factor: 0.946/2011).
22. Smita Gupta, Mousumi Chakraborty and Z.V.P. Murthy, Removal of Mercury by Emulsion Liquid Membranes: Studies on Emulsion Stability and Scale Up, accepted for publication in **Journal of Dispersion Science and Technology**, 34 (2013) 1733-1741. (Impact Factor: 0.600/2012).

2012

23. Vadakkekara Raji, Mousumi Chakraborty and Parimal A. Parikh, Catalytic performance of silica supported silver nanoparticles for liquid phase oxidation of ethyl benzene, **Industrial and Engineering Chemistry**, 51 (2012) 5691–5698 (Impact Factor: 2.237/2011).
24. Raji Vadakkekara, Mousumi Chakraborty and Parimal A. Parikh, Reduction of aromatic nitro compounds on colloidal hollow silver nanospheres, **Colloids and Surface A: Physicochemical and Engineering Aspects**, 399 (2012) 11-17 (Impact Factor: 2.24/2010).
25. Chetan M. Patel, Z.V.P. Murthy and Mousumi Chakraborty, Effects of operating parameters on the production of barium sulfate nanoparticles in stirred media mill, **Journal of Industrial and Engineering Chemistry**, 18 (2012) 1450–1457 (Impact Factor: 2.149/2010).
26. S. U. Nandanwar and Mousumi Chakraborty, Synthesis of colloidal CuO/ γ -Al₂O₃ by microemulsion and its catalytic reduction of aromatic nitro compounds, **Chinese Journal of Catalysis**, 33 (3) (2012) 1532–1541 (Impact Factor: 1.17/2011).

27. Mousumi Chakraborty, Sanjay Baweja, Sunita Bhagat and Tejpal Singh Chundawat, Microwave assisted synthesis of schiff bases: A Green Approach, **International Journal of Chemical Reactor Engineering**, 10 (1) (2012) 1542-6580 (Impact factor 0.790/2011).
28. Rakhi Mehta, Mousumi Chakraborty and P. A. Parikh, Comparative study of stability and properties of alcohol-diesel blends, **Indian Journal of Chemical Technology**, 19 (2012) 134-139 (Impact Factor: 0.606/2011).
29. Mousumi Chakraborty, D. Dobaria and P. A. Parikh, The separation of aromatic hydrocarbons through a Supported Ionic Liquid Membrane, **Petroleum Science and Technology**, 30 (2012) 2504-2512 (Impact Factor: 0.335/2011).
30. Abhilasha Dixit, A. K. Mungray and Mousumi Chakraborty, Photochemical oxidation of phenolic wastewaters and its kinetic study, **Desalination and Water Treatment**, 40 (2012) 56-62 (Impact Factor: 0.752/2011).
31. Jyoti V. Tolia, Mousumi Chakraborty and Z.V.P. Murthy, Mechanochemical synthesis and characterization of group II-VI semiconductor nanocrystals, **Particulate Science and Technology**, 30 (2012) 533-542 (Impact Factor: 0.545/2011).
32. V. Raji, M. Chakraborty and P. A. Parikh, Synthesis of starch-stabilized silver nanoparticles and their antimicrobial activity, **Particulate Science and Technology**, 30 (2012) 565-577 (Impact Factor: 0.545/2011).
33. Jyoti V. Tolia, Mousumi Chakraborty and Z.V.P. Murthy, Photocatalytic degradation of malachite green dye using doped and undoped ZnS nanoparticles, **Polish Journal of Chemical Technology**, 14 (2012) 16-21 (Impact Factor: 0.333/2010).
34. Jyoti Tolia, Mousumi Chakraborty and Z.V.P. Murthy, Synthesis and characterization of semiconductor metal sulfide nanocrystals using microemulsion technique, **Crystal Research and Technology**, 47 (2012) 909-916 (Impact Factor: 0.946/2011).
35. Jyoti Tolia, Mousumi Chakraborty and Z.V. P. Murthy, Study of dye interaction with Mn doped ZnS using photoluminescence: characteristics in degradation of malachite green, **International Journal of Chemical Engineering and Applications**, 3 (2012)136-140.

2011

36. Smita Gupta, Mousumi Chakraborty and Z.V.P. Murthy, Response surface modelling and optimization of mercury extraction through emulsion liquid membrane, **Separation Science and Technology**, 46 (15) (2011) 2332-2340 (Impact Factor: 1.088/2011).
37. Sachin U. Nandanwar, Mousumi Chakraborty and Z.V.P. Murthy, Study of formation of ruthenium nanoparticles by mixing of two reactive microemulsions, **Industrial & Engineering Chemistry Research**, 50 (19) (2011) 11445-11451 (Impact Factor: 2.237/2011).
38. Abhilasha Dixit, A. K. Mungray and Mousumi Chakraborty, Degradation of 2, 4 DCP by sequential biological-advanced oxidation process using UASB and UV/TiO₂/H₂O₂, **Desalination**, 272 (2011) 265-269 (Impact Factor: 2.590/2011).
39. Shilpa Nandwani, A. K. Mungray and Mousumi Chakraborty, Modeling and optimization of process parameters by Taguchi method: degradation of phenolic compounds by UV/TiO₂/H₂O₂ process, **Chemical Product and Process Modeling**, Article 18, 6 (1) (2011) 1-17.

40. Saurabh Singh, Mousumi Chakraborty and Z.V.P. Murthy, Microwave-assisted synthesis of poly(ethersulfone)-advantages over conventional synthesis, **Journal of Polymer Materials**, 28 (1) (2011) 233-245 (Impact Factor: 0.319/2011).
41. S. U. Nandanwar, Mousumi Chakraborty, S. Mukhopadhyay and K. T. Shenoy, Stability of ruthenium nanoparticles synthesized by solvothermal method, **Crystal Research and Technology**, 46 (4) (2011) 393 -399 (Impact Factor: 0.946/2011).
42. Jyoti Tolia, Z.V.P. Murthy and Mousumi Chakraborty, Application of mechanochemically synthesised ZnS nanoparticles in photo-catalytic oxidation of phenol, **Research Journal of Chemistry and Environment**, 15 (2) (2011) 223-228 (Impact Factor: 0.323/2011).
43. B. Modera, Mousumi Chakraborty, H. C. Bajaj and P. A. Parikh, Influences of mesoporosity generation in ZSM-5 and zeolite beta on catalytic performance during *n*-Hexane isomerization, **Catalysis Letters**, 141 (2011) 1182–1190 (Impact Factor: 2.242/2011).
44. Saurabh Singh, Mousumi Chakraborty and Z.V.P. Murthy, Microwave assisted synthesis of poly(ether sulfone) – an efficient synthetic route to control polymer chain structure, **Journal of Macromolecular Science, Part A-Pure and Applied Chemistry**, 48 (11) (2011) 872-879 (Impact Factor: 0.887/2011).

2010

45. Rakhi Mehta, Mousumi Chakraborty, P. Mahanta and P. A. Parikh, Evaluation of fuel properties of butanol-biodiesel-diesel blends and their Impact on engine performance and emissions, **Industrial & Engineering Chemistry Research**, 49 (2010) 7660-7665 (Impact factor: 2.237/2011).
46. Mousumi Chakraborty, Modhera Bharat, Hari C. Bajaj and P. A. Parikh, Simultaneous *n*-Hexane isomerization and benzene saturation over Pt/Nano-crystalline zeolite Beta, **Reaction Kinetics, Mechanisms and Catalysis**, 99 (2010) 421-429 (Impact factor: 0.557/2011).
47. Mousumi Chakraborty, Jaydeep M. Barad and Hans-Jörg Bart, Stability and performance study of w/o/w emulsion: extraction of aromatic amines, **Industrial & Engineering Chemistry Research**, 49 (2010) 5808-5815 (Impact factor: 2.149/2011).

2009

48. Mousumi Chakraborty, Jaydeep M. Barad and Hans-Jörg Bart, Formation and stability study of nano-emulsions: BTX-separation, **The Open Chemical Engineering Journal**, 3 (2009) 33-40.
49. Mousumi Chakraborty, Modhera Bharat, H. C. Bajaj and P. A. Parikh, 1-Hexene isomerization over nano-crystalline zeolite beta: Effects of metal and carrier gases on catalytic performance, **Catalysis Letters**, 132 (2009) 168–173 (Impact factor: 2.242/2011).
50. Mousumi Chakraborty, B. Modera, P. A. Parikh and R. V. Jasra, *n*-Hexane Hydroisomerization over Nano-Crystalline Zeolite Beta, **Petroleum Science and Technology**, 27 (2009) 1196-1208 (Impact factor: 0.335/2011).
51. Mousumi Chakraborty, B. Modera, P. A. Parikh and R. V. Jasra, Synthesis of nano-crystalline zeolite beta: Effects of crystallization parameters, **Crystal Research and Technology**, 44 (4) (2009) 379 -385 (Impact Factor: 0.946/2011).

2008

52. Vaishali Umrigar, Mousumi Chakraborty and P. A. Parikh, Microwave irradiated acetylation of p-Anisidine: a step towards green chemistry, **International Journal of Chemical Reactor Engineering**, 6 (2008) Article A78, 1-12 (Impact factor: 0.790/2011).
53. Mousumi Chakraborty and Hans-Jörg Bart, A novel method for improving low separation performance of toluene from n-heptane via Emulsion liquid membranes, **Filtration**, 8 (3) (2008) 229-237.

2007

54. Vaishali Umrigar, Mousumi Chakraborty and P. A. Parikh, Microwave assisted sulfonation of 2-Naphthol by Sulfuric acid: Cleaner production of Schaeffer's acid, **Industrial & Engineering Chemistry Research**, 46 (19) (2007) 6217-6220 (Impact factor: 2.237/2011).
55. Mousumi Chakraborty and Hans-Jörg Bart, Highly selective and efficient transport of toluene in bulk ionic liquid membranes containing Ag⁺ as carrier, **Fuel Processing and Technology**, 88 (2007) 43-49 (Impact factor: 2.945/2011).

2006

56. Mousumi Chakraborty, Petya Ivanova-Mitseva and 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 (Impact factor: 1.088/2011).
57. Mousumi Chakraborty and Hans-Jörg Bart, A novel method improving low separation performance of toluene from n-heptanes via emulsion liquid membranes containing substituted cyclodextrins as carriers, presented at **AFS 19th Annual 2006 Conference & Exposition**, May 9-11 (2006) **Rosemont, IL, USA**.
58. Mousumi Chakraborty and Hans-Jörg Bart, Emulsion liquid membranes: role of internal droplet size distribution on toluene/n-heptane separation, **Colloids and Surfaces A: Physicochemical and Engineering Aspects**, 272 (2006) 15-21 (Impact factor: 2.24/2011).

2005

59. Mousumi Chakraborty and Hans-Jörg Bart, Studies on separation mechanism of toluene from n-heptane using Ag⁺-containing emulsion liquid membranes, presented at **DECHEMA/GVC Jahrestagungen**, September 6-8 (2005), **Wiesbaden, Germany**.
60. Mousumi Chakraborty and Hans-Jörg Bart, Separation of toluene and n-heptane using Ag⁺-containing emulsion liquid membranes, **Chemical Engineering & Technology**, 28 (2005)1-7 (Impact factor: 1.598/2009).
61. 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 (Impact factor: 1.088/2011).

62. Mousumi Chakraborty and Hans-Jörg Bart, Separation of toluene and n-heptanes using Ag⁺- containing emulsion liquid membranes, presented at **DECHEMA/GVC "Extraction"** March 7-8 (2005), **Frankfurt, Germany**.

2004

63. 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 (Impact factor: 1.088/2011).

2003

64. 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 (Impact factor: 1.088/2011).
65. 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 (Impact factor: 3.85/2011).
66. 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, **Colloids and Surfaces A: Physicochemical and Engineering Aspects**, 224 (2003) 65-74 (Impact factor: 2.24/2011).