

Jayanta Kumar Basu

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Educational Background:

- B.Tech Chemical Engineering, Calcutta University, 1981
- M. Ch.E. : Jadavpur University, Kolkata, 1983
- Ph. D. : Chemical Engineering, IIT Kharagpur, 1991

Teaching Experience:

- About 26 years of total teaching experience (04.9.1989 to 23.01.1991 at BITS, Pilani, Rajasthan and 28.01.1991 to till date at IIT Kharagpur)

Research Areas:

- Adsorption and Separation Science
- Waste Water Treatment
- Reaction Engineering

Ph.D. Supervision:

- Liquid-Liquid Flow In Small Diameter Conduits- Hydrdynamics and Mass Transfer.
- Surfactant Enhanced Lipase Catalyzed Oil Hydrolysis.
- Photocatalytic Degradation of Organic Compounds using Titania-Zirconia Nano Composite.
- Low Severity Oxidation of Thiophenic S-Compounds using Nanocrystalline Titanium Silicate Catalysts.
- Application of Ceramic Foam Supported Catalysts in Alkylations Reactions.
- Alkylation of Aromatics with Alcohols and Acetone over Modified Zeolites.
- Removal of Toxic Dyes from Industrial Effluent using a Combination of Adsorption and Nanofiltration.
- Development and Application of an Adsorbent for Removal of Water Pollutants
- Removal of Arsenic from Water using Raw and Treated Laterite As Adsorbent

Subjects Taught :

- **U.G.** Heat Transfer, Environ. Pollution. Control, Fund. of Rate Processes, Intro.Chemical Processes, Chemical Process Technology, Thermodynamics, Reaction Engineering.
- **P.G.** Adv. Heat Transfer, Chemical Reactor Analysis.

Awards and Honours

- Kuloor Memorial Award for best technical paper published in Indian Chemical Engineers in 2008, 2009.
- IChE NRC Award for Second Best Paper published in Indian Chemical Engineers in 2008, 2009.
- Best Poster Award in ICONSAT 2010 held at IIT Mumbai, 2010.

Projects :

- Coke Plant Waste Water Treatment of Integrated Iron & Steel Plant by LD Slag & Simultaneous Accelerated Stabilization of LD Slag. (TISCO)
- Development and Application of Ceramic Foam Supported Catalysts in Petrochemical (CSIR).
- Development of Low Cost Household Filter for Arsenic and Other Pollutant Free Drinking Water using Modified Laterite (DST).
- Development of Catalysts for Petroleum Refining from flyash (MHRD)
- Removal of Toxic Dyes from Industrial Effluent using a Combination of Adsorption and Membrane Separation Process(MHRD)

Foreign Visits:

- Attended 3rd International Conference on Chemical Engineering 2011, ICChE2011, December, Dhaka, Bangladesh
- Attended 243rd Annual Meeting of American Chemical Society (23-29th March,2012 at San Diego, USA)

Selected Publications:

Journals:

1. Debarpita Ghosal, **Jayanta Kumar Basu** and Sonali Sengupta, Application of La-ZSM-5 coated silicon carbide foam catalyst for toluene methylation with methanol, *Bull. Che. Reaction Eng. & Catal.*, 10 (2), 201-209(2015).

2. Koushik Guha Biswas, Subhabrata Ray, Gargi Das and **Jayanta Kumar Basu**, A simple flow-device for enhanced mass transfer in reduced dimension, *Chem. Eng. J.*, 279, 973-982(2015).
3. Debarpita Ghosal, **Jayanta Kumar Basu** and Sonali Sengupta, Characterization of Alumina and H-ZSM-5 Zeolite and Comparison of their Performance by Toluene Methylation Reaction with Ceramic Foam as Catalyst Support, *Current catal.*4(3) (2015).
4. Uttam Maity, **Jayanta Kumar Basu** and Sonali Sengupta, Oxidative removal of dibenzothiophene from a model fuel using nanocrystalline Ti-beta catalyst, *Jr. Energy Instt.*(2015).
5. K. G. Biswas, G. Das, S. Ray and **J. K. Basu**, Mass transfer characteristics of liquid-liquid flow in small diameter conduits, *Chem. Eng. Sci.*, 122, 652-661(2015).
6. K.G. Biswas, G Das, S. Ray, **J.K. Basu**, The use of bends for enhanced mass transfer during liquid-liquid flow through milli channels, *Int. J. Heat and Mass Trans.*, 84, 876-892(2015).
7. Koushik Guha Biswas, Rahul Patra, Gargi Das, Subhabrata Ray and **Jayanta Kumar Basu**, Effect of flow orientation on liquid-liquid slug flow in a capillary tube, *Chem. Eng. J.*, 262, 436-446(2015).
8. Lipika Das, Uttam Maity, **Jayanta Kumar Basu**, The photocatalytic degradation of carbamazepine and prediction by artificial neural networks, *Process Safety and Environmental Protection* 92 (6), 888-895(2014).
9. L. Das, S. K. Barodia, S. Sengupta and **J. K. Basu**, Aqueous degradation kinetics of pharmaceutical drug diclofenac by photocatalysis using nanostructured titania-zirconia composite catalyst, *Int. J. Environ. Sci. Technol.*12,317-326(2015)
10. Lipika Das and **Jayanta Kumar Basu**, Photocatalytic treatment of textile effluent using titania-zirconia nano composite catalyst, *J. Ind. Eng. Chem.*24, 245-250(2014).
11. Uttam Maity, **Jayanta Kumar Basu** and Sonali Sengupta, Performance study of extraction and oxidation-extraction coupling processes in the removal of thiophenic compounds, *Fuel Processing Technology*, 121,119-124(2014)
12. Lipika Das, Monal Dutta and **Jayanta Kumar Basu**, Photocatalytic degradation of phenol from industrial effluent using titania-zirconia nanocomposite catalyst, *Int. J. Env. Sci.* 4(3),415-431(2013)
13. Abhijit Maiti, Barun Kumar Thakur, **Jayanta Kumar Basu** and Sirshendu De, Comparison of treated laterite as arsenic adsorbent from different locations and performance of best filter under field conditions, *J. Hazard. Mat.* 262,1176- 1186(2013).
14. Uttam Maity, **Jayanta Kumar Basu** and Sonali Sengupta, A neural network prediction of conversion of benzothiophene oxidation catalyzed by nano-Ti-beta catalyst, *Fuel*, 113, 180-186(2013).
15. Debajyoti Goswami, **Jayanta Kumar Basu**, and Sirshendu De, Lipase applications in oil hydrolysis with a case study on castor oil: a review, *Critical Reviews in Biotechnol.*, 33(1),81-96(2013).
16. Monal Dutta and Pinaki Ghosh, **Jayanta Kumar Basu**, Application of artificial neural network for the decolorization of direct blue 86 by using microwave assisted activated carbon, *Journal of the Taiwan Institute of Chemical Engineers.* , 43, 879-888(2012).

17. Monal Dutta and **Jayanta Kumar Basu**, Application of artificial neural network for prediction of Pb(II) adsorption characteristics, *Environ. Sci. Pollut. Res.*,20,3322-3330(2013)
18. D. Goswami, S. De and **J. K. Basu**, Effects of Process variables and additives on mustard Oil Hydrolysis by Porcine Pancreas Lipase, *Brazilian J. Chem. Eng.*, 29(3), 449 -460(2012)
19. A.Kundu, **J. K Basu** and G. Das, A novel gas–liquid contactor for chemisorption of CO₂, *Sepr. Purif. Technol*, 94, 115-123(2012)
20. Debajyoti Goswami, **Jayanta Kumar Basu** and Sirshendu De, Optimal hydrolysis of mustard oil to erucic acid: A biocatalytic approach, *Chem. Eng. J.* , 181– 182, 542–548(2012).
21. Uttam Maity, Rosilda Selvin, **Jayanta Kumar Basu**, and Sonali Sengupta, Application of Synthesized Nano-crystalline titanium silicate-1 in the oxidation of thiophene in a kinetic approach, *J. Nanoeng. Nanomanuf.* 2, 241-247 (2012).
22. Fe-Al nano-oxide prepared by sol-gel method using precursor of HCl digested liquid fraction of laterite: Arsenic adsorption performance by A. Maiti, J. K. Basu and S. De *International Journal of Nanoscience*, 10, 1173-1177 (2011)
23. Abhijit Maiti, **Jayanta Kumar Basu** and Sirshendu De, Experimental and kinetic modeling of As(V) and As(III) adsorption on treated laterite using synthetic and contaminated groundwater: Effects of phosphate, silicate and carbonate ions, *Chem. Eng. J.*, 191, 1– 12 (2012).
24. Aryav Sengupta, Prashant D. Kamble, **Jayanta Kumar Basu**, and Sonali Sengupta, Kinetic Study and Optimization of Oxidative Desulfurization of Benzothiophene Using Mesoporous Titanium Silicate-1 Catalyst, *Ind. Eng. Chem. Res.*, 51, 147–157(2012).
25. Abhinav Norisetty, **Jayanta Kumar Basu** and Sonali Sengupta, Application of Alumina to Oil and Grease Removal from Refinery Effluent, *Hydrol. Current Res.*,2(4), (2011).
26. Debajyoti Goswami, Sirshendu De, and **Jayanta Kumar Basu**, Kinetics Study of Surfactant Enhanced Lipase Catalyzed Oil Hydrolysis, *J. Biochem. Biotechnol.*, 2(1), 7-13 (2011).
27. N. Jose, S. Sengupta, **J.K. Basu**, Optimization of oxidative desulfurization of thiophene using Cu/titanium silicate-1by box-behnken design, *Fuel*, 90,226-232(2011).
28. D. Goswami, **J. K. Basu**, S. De, Erucic Acid Production using Porcine Pancreas Lipase: Enhancement by Mixed Surfactants, *Biotechnol. Bioproc. Eng.*, 16 (2), 327–336(2011).
29. Abhijit Maiti, **Jayanta Kumar Basu** and Sirshendu De, Chemical treated laterite as promising fluoride adsorbent for aqueous system and kinetic modeling, *Desalination*, 265(1-30),28-36(2010)
30. Abhijit Maiti, **Jayanta Kumar Basu** and Sirshendu De, Development of a Treated Laterite for Arsenic Adsorption: Effects of Treatment Parameters, *Ind. Eng. Chem. Res*, 49, 4873–4886(2010)
31. Abhijit Maiti, **Jayanta Kumar Basu** and Sirshendu De, Removal of arsenic from synthetic and natural groundwater using acid activated laterite, *Env. Progress and Sustainable Energy(AICheE)*, 29(4),457-470(2010).
32. Abhijit Maiti, Vaibhav Agarwal, Sirshendu De, **Jayanta K. Basu**, Removal of As(V) using iron oxide impregnated carbon prepared from Tamarind hull, *J. Environmental Sci. and Health*, Part A, Volume 45(10),1207-1216(2010)

33. Shivareddy Induri, Sonali Sengupta, **Jayanta K. Basu**, A kinetic approach to the esterification of maleic anhydride with methanol on H-Y zeolite, *J. Ind. Eng. Chem.* 16, 467-73(2010).
34. Abhijit Maiti, **Jayanta Kumar Basu** and Sirshendu De, Desorption kinetics and leaching study of arsenic from arsenite/arsenate-loaded Natural Laterite, *Int. J. Environmental Technology and Management*, 12, (2-4),294-307(2010).
35. Debajyoti Goswami, Ramkrishna Sen, **Jayanta K Basu**, Sirshendu De, Surfactant Enhanced Ricinoleic Acid Production using Candida Rugosa Lipase, *Bioresource Technology*, 101,6-13(2010).
36. Debajyoti Goswami, Raj Shekhar, Mihir K. Purkait, **Jayanta Kumar Basu**, Sirshendu De, Micellar Enhanced Base Catalyzed Hydrolysis of Ethyl Acetate Using TTAB, *Int. J. of Chemical Reactor Engineering*, 7,1(2009).
37. Abhijit Maiti, Himanshu Sharma, **Jayanta Kumar Basu** and Sirshendu De, Modeling of arsenic adsorption kinetics of synthetic and contaminated groundwater on natural laterite", *J. Hazardous Materials*, 172,928-934(2009).
38. Sanjay K. Kureel, Sonali Sengupta and **Jayanta K. Basu**, Removal of nitrophenol from water by organoclay, *Int. J. Environmental Poll. Control and Management*, 1(1),41-53(2009).
39. Debajyoti Goswami, **Jayanta Kumar Basu** and Sirshendu De, Optimization of Process Variables in Castor Oil hydrolysis by Candida Rugosa lipase with buffer as dispersion medium, *Biotechnol. and Bioproc. Eng.*, 14,220-224(2009).
40. N. Jose, S. Sengupta, **J.K. Basu**, Selective production of benzaldehyde by permanganate oxidation of benzyl alcohol using 18-crown-6 as phase transfer catalyst, *Journal of Molecular Catalysis A: Chemical*, 309, 153–158(2009).
41. Debajyoti Goswami, Ramkrishna Sen, **Jayanta Kumar Basu**, Sirshendu De, Maximization of bioconversion of castor oil into ricinoleic acid by response surface methodology, *Bioresource Technology*, 100, 4067–4073(2009).
42. Abhijit Maiti, Sunando DasGupta, **Jayant Kumar Basu**, and Sirshendu De, Batch and Column Study: Adsorption of Arsenate Using Untreated Laterite as adsorbent, *Ind. Eng. Chem. Res.*, 47, 1620-1629(2008).
43. Debajyoti Goswami, Atul D. Patil, Anand V. Patwardhan, **Jayanta Kumar Basu** and Sirshendu De, Hydrolysis of Castor Oil using Lipase with oil as Dispersion Medium, *Int. J. Chem. Sci.*, 5(4),1487-1496(2007).
44. Abhijit Maity, Sunando DasGupta, **Jayanta Kumar Basu**, Shirsendu De., Adsorption of arsenite using natural laterite as adsorbent, *Sep. and Purif. Technol.*,55,355-369(2007).
45. Sanghamitra Barman, Narayan C. Pradhan, and **Jayanta, K. Basu**, Kinetics of Alkylation of Phenol with Methanol over ce-exchanged NaX Zeolite, *Catal. Lett.*, 111(1-2),67-73(2006).
46. S. Barman, N. C. Pradhan, and **J. K. Basu**, Kinetics of alkylation of benzene with ethyl alcohol catalysed by Ce-exchanged NaX Zeolite, *Indian Chem. Engrs. Section-A*, 48(1), 10-17(2006).
47. Adsorption of reactive dyes from a textile effluent using sawdust as the adsorbent, Sourja Chakraborty, **Jayanta, K. Basu** and Sunando Dasgupta, *Ind Eng. Chem. Res.*, 45, 4732-4741(2006).

48. S. Barman, N. C. Pradhan, and **J. K. Basu**, Kinetics of alkylation of benzene with isopropyl alcohol over Ce-exchanged NaX Zeolite, *Ind. Eng. Chem. Res.*, 44, 7313-7319(2005).
49. S. Chakraborty, S. De, S. Dasgupta and **J. K. Basu** Adsorption study for the removal of basic dye: experimental and modeling, *Chemosphere*, 58, 1079-1086 (2005).
50. S. Chakraborty, S. De, **J. K. Basu** and S. Dasgupta, Treatment of a textile effluent: application of a combination method involving adsorption and nanofiltration", *Desalination*, 174, 73-85(2005)
51. P. R. Jena, **J. K. Basu** and S. De, A generalized shrinking core model for multicomponent batch adsorption process, *Chemical Engg. J.*, 102, 267-275(2004).
52. S. Chakraborty, B. C. Bag, S. DasGupta, **J.K. Basu** and S. De, Prediction of permeate flux and permeate concentration in nanofiltration of dye solution, *Sep. & Purif. Technol.*, 35, 141-152(2004).
53. S. Chakraborty, B.C. Bag, S. Dasgupta, S. De and **J.K. Basu**, Separation and fractionation of dye solution by nanofiltration, *Separation Science and Technol.*, 38 (1), 219-235, 2003.
54. P. R. Jena, S. De and **J. K. Basu** A generalized shrinking core model applied to batch adsorption, *Chemical Engg. J.*, 95, 143-154(2003).
55. S. Chakraborty, M. Purakait, **J. K. Basu**, S. De and S. DasGupta, Nanofiltration of textile plant effluent for color removal and reduction in COD, *Sep. and Purif. Technol.*, 31 (2), 141-151(2003).
56. B. Dutta, **J. K. Basu** and S. DasGupta, Removal of cresol from aqueous solution using flyash as adsorbent : Experiments and modeling, *Sep. Sci. and Technol.*, 38(6), 1345-1360(2003).
57. K. Pastagia, S. Chakraborty, S. DasGupta, **J.K. Basu** and S. De, Prediction of permeate flux and concentration of two component dye mixture in a batch nanofiltration, *J. Membrane Science*, 218, 195-210(2003).
58. S. Datta, **J. K. Basu** and R. N. Ghar, Studies on adsorption of p-nitrophenol on charred saw-dust, *Sep. and Purif. Technol.*, 21, pp.227-235(2000).

Conferences:

1. Jayanta Kumar Basu, Desulfurization of transportation fuels by non-hydrogenous processes, Proceeding of 243rd Annual Meeting ACS, March 2012, Sandiego, USA
2. Bandaru Kiran and **Jayanta Kumar Basu**, Removal of Alizarine Red-S By Electro-coagulation, Proceedings of the 3rd International Conference on Chemical Engineering 2011, ICChE2011, December, Dhaka, Bangladesh.
3. A. Kundu, J.K. Basu, S. Ray, G. Das, An alternative contacting device for estimation of mass transfer coefficient for gas-liquid system, Chemcon-2011, Bangalore, December, 2011.
4. Characterization and comparison of HZSM-5 zeolite and high surface-area alumina coated ceramic foam, 64th Annual Session of the Indian Institute of Chemical Engineers, CHEMCON 2011, Bangalore, December, 2011.
5. Debajyoti Goswami, **Jayanta Kumar Basu**, Sirshendu De, "Effect of Additives and Process Parameters on Lipase Catalyzed Ricinoleic Acid Esterification and Castor Oil Hydrolysis", Young Researchers' Conference 2008.

6. Debajyoti Goswami, Chandan Das, Sunando DasGupta, **Jayanta Kumar Basu**, Sirshendu De, "Process Condition Optimization of Micelle Catalyzed Isopropyl Myristate Hydrolysis", CHEMCON 2007, Kolkata, December 2007.
7. Debajyoti Goswami, Atul D. Patil, Chandan Das, Anand V. Patwardhan, Sunando DasGupta, **Jayanta Kumar Basu**, Sirshendu De, "Selection of Suitable Lipase and Process Condition Optimization of Lipase Catalyzed Castor Oil Hydrolysis" CHEMCON 2007, 60th Annual Session of IChE, Kolkata, December, 2007
8. **Jayanta Kumar Basu**, Induri Shiva Reddy and Sonali Sengupta, Study of Esterification of Meleic Anhydride with Alcohols on H-Y Zeolite, CHEMCON-2007, 60th Annual Session of IChE, Kolkata, December, 2007.
9. A. Maity, V. Agrawal, **J.K. Basu**, B. Sarkar, S. Dasgupta and S. De, Removal of Arsanate from Aqueous System by Iron Oxide Impregnated Activated Carbon Prepared from Tamarind Shell, CHEMCON-2007, 60th Annual Session of IChE, Kolkata, 2007
10. S. Chakraborty, S. De, S. DasGupta, and **J. K. Basu** "Treatment of a textile effluent containing Reactive dyes by adsorption", Proc. 56th Annual session of the IICHE, 2003, Bhubaneswar, India
11. S. Chakraborty, S. De, S. DasGupta, and **J. K. Basu** "Studies on adsorption of crystal violet and methylene blue from aqueous solution using a low cost adsorbent", Proc. 55th Annual session of the IChE, 2002, Hyderabad, India.
12. S. Chakraborty, S. De, S. DasGupta, and **J. K. Basu**, "Removal of Dyes from aqueous solution using a low cost adsorbent", Proc. WAPDEC-2002(Water and waste water-perspective of developing countries), Ndelhi, pp-1089-1096
13. Chakraborty S., B.C Bag., S DasGupta., S. De and **J. K. Basu** "Separation and Fractionation of Dye Solutions in Cross-flow Nano-filtration" Proc., Int. Conf. On Advances in Civil Engg., Water Res and Environ. Engg., Allied Publisher Ltd., pp-562-569, 2002.
14. Chakraborty S., M Purkait, S. DasGupta, S. De and **J. K. Basu** "Treatment of textile plant effluent using cross flow nanofiltration", Proc. 54th Annual session of the IChE, 2001, Chennai, India.
15. De Dhruva S. and **J. K. Basu** "Removal of Methylene blue from aqueous solution by adsorption on to a low-cost adsorbent developed from sawdust" Proc. 51st Annual session of the IChE, 1998, Visakapatnam, India.
16. Biswas .P. and **J. K. Basu** "Removal of Phenol from aqueous solution by adsorption on activated charcoal prepared from saw-dust" Proc. 51st Annual session of the IChE, 1998, Visakapatnam, India.
17. Chattopadhyay M., **J. K. Basu** and R. N. Ghar "Liquid phase adsorption on charred saw-dust: Modelling and simulation study" " Proc. 51st Annual session of the IChE, 1998, Visakapatnam, India.
18. Baneerjee J., **J. K. Basu** and U. P. Ganguly "Some studies on hydrodynamics of reverse fluidization -determination of minimum reverse fluidization velocity", Proc. of 42nd congress of Indian Society of Theo. and Appl. Mechanics, 1997, Gujrat, India.
19. Chakravorty S., **J. K. Basu**., A. K. Biswas and S. S. Bandyopadhyay "Adsorption of carbondioxide into aqueous blends of MEA and AMP, Proc. 49th Annual session of the IChE, 1996, Ankleshwar, India.

20. Daiyan S.A., **J.K. Basu**, R.N. Tarafdar and A.K. Biswas "Removal of hexavalent chromium from aqueous solution of using cellulose based adsorbent prepared from saw-dust", Proc. 47th Annual session of the IChE, 1994, Kharagpur, India.
21. Mukhopadhyay M., **J.K. Basu** , R.N. Tarafdar, R.N. Ghar and A.K. Biswas "Determination of physical and chemical solubility's of CO₂ in amine blends of MEA and AMP using N₂O analogy" Proc. 47th Annual session of the IChE, 1994, Kharagpur, India.
22. **Basu, J.K.**,and A.K. Biswas ., "Prediction of Catalytic Activity for Palletized catalyst with pore diffusion" Proc. 46th Annual session of the IChE, 1993, Mumbai, India.
23. **J.K. Basu**, D. D. Kar and A. K. Biswas " Deactivation of solid acid catalyst under the influence of intra- particle diffusion " Proc. 45th Annual session of the IChE, 1992, Manipal, India.
24. **J.K Basu**, D. D. Kar and A. K. Biswas " A deactivation study of a promoted γ -alumina catalyst for a vapor phase condensation of aniline " Proc. 44th Annual session of the IChE, 1991, Chennai, India.
25. **J.K. Basu**, D. D. Kar and A. K. Biswas " Kinetics of a determination reaction over promoted and deactivated catalyst" Proc. 43th Annual session of the IChE, 1990, Varanasi, India.
26. Singh S. K. and **J. K. Basu** " Low cost waste treatment" Proc. Technology upgradation the need and the national effort ,pp. 113-118, 1990, Pilani, India.
27. Sha B.K., **J .K.Basu** and A.K.Biswas" Regeneration of spent catalyst used in the condensation of aniline to diphenylamine" Proc. 42nd Annual session of the IChE, 1989, Thiruvananthapuram, India.
28. Chattopadhyay C, **J. K. Basu**, R. N. Ghar and A.K.Biswas, "Evaluation of kinetic parameters by simulation technique" Proc. 42nd Annual session of the IChE, 1989, Thiruvananthapuram, India.
29. **Basu J.K.**, D. D. Kar and A. K. Biswas "Studies on the kinetics of vapour phase condensation of aniline to diphenylamine using a treated catalyst" Proc. 41st Annual session of the IChE, 1988, Vadodara, India.
30. Nag A. and **J.K. Basu**. " Studies on production of phosphoric acid from Purulia-rock phosphate by solvent dissociation method" Proc. National symposium on application of geochemistry, 1988, Kolhapur, India.
31. **J.K Basu** and B .Bose. " Viscous flow of gas-liquid system through a vertical pipe" Proc.14th National conference of fluid mechanics and fluid power , pp. 71-74, 1986, Roorkee, India.