

Curriculum Vitae

DR. SUSHIL KUMAR

Correspondence Address:

Assistant Professor
Chemical Engineering Department,
Birla Institute of Technology and Science (BITS),
PILANI – 333031 (Rajasthan) INDIA
Phone: +91-1596-245073/Ext. 215 (O)
+91-9602214455 (M)
Email: sushilk2006@gmail.com; skumar@bits-pilani.ac.in

Permanent Address:

S/o Shri Girdharee Lal
Mohalla – Gopalpur
Town & Post – Wazirganj
District – Budaun
202526 (UP) INDIA

1. PERSONAL INFORMATION

Date of Birth : June 30, 1978
Place of Birth : Budaun (UP)
Citizenship : Indian
Gender : Male
Marital Status : Married

2. EDUCATIONAL QUALIFICATIONS

Degree	University/Institute	Year	Subject(s)/Discipline	%/CGPA
Ph. D.	Birla Institute of Technology and Science (BITS), PILANI	2010	Chemical Engineering	-
M. Tech.	Indian Institute of Technology (IIT), KANPUR	2003	Chemical Engineering	8.33/10
B. Tech.	Harcourt Butler Technological Institute (HBTI), KANPUR	2000	Chemical Engineering	67%
10+2	UP Board Allahabad	1995	P.C.M., Hindi, English	68.2%
10	UP Board Allahabad	1993	P.C.M.B., Hindi, English	73%

3. PROFESSIONAL EXPERIENCE

Organization/Institute	Position	Period		Responsibilities
		From	To	
Birla Institute of Technology and Science (BITS), Pilani, (INDIA)	Asst. Professor	01.08.2010	Present date	Teaching and Research
	Lecturer	01.01.2006	31.07.2010	
	Asst. Lecturer	24.01.2005	31.12.2005	Teaching
Central Institute of Plastics Engineering and Technology (CIPET), Lucknow (INDIA)	Technical Officer	21.08.2004	21.01.2005	Research, Teaching and Calibration of Measuring Equipments
	Graduate Engineer	21.08.2003	21.08.2004	
	Trainee			

4. PROJECTS (Completed/On-going)

4.1 Funded Research Projects (Ongoing)

- *Reactive Extraction of Nicotinic- and Isonicotinic Acids from Aqueous Solution* funded by **Department of Science & Technology, New Delhi (India)** under Fast Track Scheme For Young Scientists, Rs. 20.5 Lakhs, 2012-2014.
- *Experimental and Theoretical Studies on Liquid-Liquid Equilibrium of Aromatics + Aliphatics + Ionic Liquids* funded by Birla Institute of Technology and Science (BITS), Pilani, Rs. 2.0 Lakhs 2012.

4.2 Ph. D. Thesis: *Intensification of Recovery of Carboxylic Acids from Aqueous Solutions using Reactive Extraction*

4.3 M. Tech. Thesis: *Synthesis and Characterization of Metallocene Catalyst - Co-catalyst and Polymerization of Ethylene*

4.4 B. Tech. Projects

- Designed a Sulfuric Acid Plant to produce 600 TPD, 98% concentrated acid by Single Contact Single Absorption (SCSA) process based upon smelter gases.

4.5 Other Research Projects

- Life Assessment of Tubular Composite Structures sponsored by Armament Research & development Estate (Ministry of Defense, Govt. of India), Pune (Maharashtra) at CIPET Lucknow, 2004-2005.
- Synthesis and Characterization of Polylactic acid and Ionic Liquid at IIT-Kanpur, 2003.

5.1 RESEARCH INTERESTS

Separation Processes
 Process Intensification
 Biochemical Engineering
 Polymer Technology
 Modeling and Simulation
 Liquid-Liquid Equilibria
 Renewable Energy Sources

5.2 MAJOR COURSES TAUGHT

Chemical Engineering Thermodynamics
 Process Intensification
 Introduction to Polymer Science & Technology
 Selected Chemical Engineering Operations
 Kinetics and Reactor Design
 Biochemical Engineering
 Environmental Pollution Control
 Heat Transfer Operations
 Structures and Properties of Materials
 Plastics Processing and Testing

6. POST GRADUATE THESIS SUPERVISIONS

S. No.	Name of student	Title of Thesis	Doctorate/ Master's	Year
1	Dipaloy Datta	Experimental and Theoretical Studies on Reactive Extraction of Carboxylic Acids	Doctorate	Submitted May'2012
2	Nikhil Prakash	Modeling and Simulation of Metallocene Catalyzed Polyolefins	Doctorate	Ongoing
3	Neha Chomal	Extraction of Organic Compounds using Ionic Liquids	Doctorate	Ongoing
4	Sharvani Thakur	LLE of Aliphatic, Aromatic Compounds and Ionic Liquids	Master	Ongoing
5	Saptak Rarrotra	Kinetic Study on Reactive Extraction of Itaconic Acid	Master	2011
6	Kusuma Rajput	Application of Ionic Liquids in the Desulfurization of Liquid Fuels	Master	2011
7	Neha Chomal	Reactive Extraction of Itaconic Acid from Aqueous Solution	Master	2010
8	Dipaloy Datta	Separation of Carboxylic Acids from Aqueous Solution by Reactive Extraction	Master	2009
9	Karan Gupta	Kinetics of Reactive Extraction using Non-traditional Optimization Techniques	Master	2008

7. PUBLICATIONS

7.1 Journals

Published/Accepted

1. **Kumar, S.**, Babu, B.V. Investigations of Biocompatible Systems for Reactive Extraction of Propionic Acid Using Aminic Extractants. *Biotechnology and Bioprocess Engineering (Springer)*. Accepted, 2012
2. Datta, D., **Kumar, S.** Intensification of Recovery of Formic Acid from Aqueous Stream using Reactive Extraction with N, N-dioctyloctan-1-amine: Effect of Diluent and Temperature, *Chemical Engineering Communications (Taylor and Francis)*. Accepted, 2012
3. Datta, D., **Kumar, S.** Reactive Extraction of Pyridine Carboxylic Acids with N, N-Dioctyloctan-1-amine Dissolved in Five Different Diluents. *Separation Science and Technology (Taylor and Francis)*. Accepted, 2012.
4. Datta, D., Kumar, S., Reactive Extraction of Picolinic Acid with Tri-n-Octylamine Dissolved in Petroleum Ether, MIBK and Iso-amyl Alcohol. *Journal of Environmental Research and Development*. Accepted, 2012.
5. Datta, D., **Kumar, S.**, Wasewar K.L., Babu B.V. Comparative Study on Reactive Extraction of Picolinic Acid with Six Different Extractants (Phosphoric and Aminic) Dissolved in Two Different Diluents (Benzene and Decane-1-ol). *Separation Science and Technology (Taylor and Francis)*. 2012, 47(7), 997-1005.
6. Datta, D., **Kumar, S.**, Modeling and Optimization of Recovery Process of Glycolic Acid using Reactive Extraction. *International Journal of Chemical Engineering and Applications (IACSIT)*. 2012, 3(2), 141-146.
7. **Kumar, S.**, Datta, D., Babu, B.V. Differential Evaluation Approach for Reactive Extraction of Propionic Acid using Tri-n-Butyl Phosphate (TBP) in Kerosene and 1-Decanol. *Material and Manufacturing Processes (Taylor and Francis)*. 2011, 26, 1222–1228.
8. Datta, D., **Kumar, S.**, Reactive Extraction of Benzoic Acid and Pyridine-3-Carboxylic Acid using Organophosphoric- and Aminic Extractants Dissolved in Binary Diluent Mixtures. *Journal of Chemical & Engineering Data (American Chemical Society)*. 2011, 56(8), 3367–3375.
9. **Kumar, S.**, Datta, D., Babu, B.V. Estimation of Equilibrium Parameters using Differential Evolution in Reactive Extraction of Propionic Acid by Tri-n-Butyl Phosphate Dissolved in *n*-Decane & 1-Decanol. *Chemical Engineering Processing: Process Intensification (Elsevier)*. 2011, 50(7), 614-622.
10. Datta, D., **Kumar, S.** Reactive Extraction of 2-Methylidenebutanedioic Acid with N, N-Dioctyloctan-1-amine Dissolved in Six Different Diluents: Experimental and Theoretical Equilibrium Studies at (298 ± 1) K. *Journal of Chemical & Engineering Data (American Chemical Society)*. 2011, 56(5), 2574-2582.
11. Datta, D., **Kumar, S.** Reactive Extraction of Glycolic Acid using Tri-n-Butylphosphate and Tri-n-Octylamine in Six Different Diluents: Experimental Data and Theoretical Predictions. *Industrial and Engineering Chemistry Research (American Chemical Society)*. 2011, 50, 3041–3048.
12. **Kumar, S.**, Datta, D., Babu, B.V. Experimental Data and Theoretical (Chemodel Using the Differential Evolution Approach and Linear Solvation Energy Relationship Model) Predictions on Reactive Extraction of Monocarboxylic Acids Using Tri-*n*-octylamine. *Journal of Chemical & Engineering Data (American Chemical Society)*. 2010, 55, 4290–4300.
13. **Kumar, S.**, Babu, B.V. Extraction of Pyridine-3-carboxylic Acid Using 1-Dioctylphosphoryloctane (TOPO) with Different Diluents: Equilibrium Studies, *Journal of Chemical & Engineering Data (American Chemical Society)*. 2009, 54, 2669-2677.
14. **Kumar, S.**, Babu, B.V. Process Intensification of Nicotinic Acid Production via Enzymatic Conversion using Reactive Extraction as Separation Technique. *Chemical and Biochemical Engineering Quarterly (Croatian Society of Chemical Engineers)*. 2009, 23, 367-376.
15. **Kumar, S.**, Wasewar, K.L., Babu, B.V. Intensification of Nicotinic Acid Separation using Organophosphorus Solvating Extractants: Extraction Equilibria. *Chemical Engineering and Technology (Wiley Interscience)*. 2008, 31, 1584-1590.
16. **Kumar, S.**, Babu, B.V. Process Intensification for Separation of Carboxylic Acids from Fermentation Broths using Reactive Extraction. *Journal on Future Engineering and Technology (i-manager publications)* 3, 2008, 21-27.

17. **Kumar, S.,** Babu, B.V. Propionic Acid Production via Fermentation Route using Renewable Sources. *Chemical Industry Digest (Blockdale publications)*. 2008, 9, 76-81.
18. **Kumar, S.,** Kumar, M., Kumar, V. Plastics as a Superconductor: A Brief Study. *Journal of Popular Plastics & Packaging* January, 2005, 87-92.
19. **Kumar, S.,** Akhtar S., Kumar, V. Bi-axially Stretched Biodegradable Film Based on Polylactic Acid: A Review. *Journal of Popular Plastics & Packaging* 2005.

Communicated

1. Datta, D., **Kumar, S.** Reactive Extraction of Picolinic Acid using Non-toxic Extractant and Diluent Systems. *Journal of Chemical & Engineering Data (American Chemical Society)*. 2012
2. Datta, D., **Kumar, S.** Modeling using Response Surface Methodology and Optimization using Differential Evolution of Reactive Extraction of Glycolic Acid, *Chemical Engineering Communications (Taylor and Francis)*. 2012
3. **Kumar, S.,** Sheth, P.N., Babu, B.V. Investigations of Role of Modifiers in Reactive Extraction of Propionic Acid with TOA using Differential Evolution. *AIChE Journal (Wiley Interscience)*. 2012

7.2 Papers in Conference Proceedings: 25 (International) + 13 (National)

7.3 Books/Book Chapters

1. Proceedings, *Conference on Technological Advancements in Chemical and Environmental Engineering*. **Kumar, S.,** Jain, A. (eds.), Excellent Publishing House, New Delhi, March 23-24, 2012 (ISBN No.: 978519381583-31-9).
2. **Kumar, S.,** Prakash, N., Datta, D. *Biopolymers based on Carboxylic Acids Derived from Renewable Resources*, Biopolymers: Biomedical and Environmental Applications. Susheel Kalia and Luc Av erous (eds.), Scrivener Publishing LLC, USA, 2011, 169-182 (ISBN No.: 9780470639238).

8. CONFERENCE/WORKSHOP/REFRESHER COURSES (ATTENDED/ORGANIZED)

8.1 Conference/Workshop Short/Term Organized

- **Organizing Secretary**, National Conference on Technological Advancements in Chemical and Environmental Engineering (TACEE-2012). March 23-24, 2012.
- **Treasurer**, Students' Chemical Engineering Congress (SCHEMCON – 2012). September 21-22, 2012.
- **Program Committee Member**, National Seminar on Photonic Polymers: Materials, Devices and Applications (NSPPMDA – 2008) at BITS Pilani, April 3-4, 2008.
- **Program Committee Member**, National Conference on Environmental Conservation (NCEC - 2006) at BITS Pilani, September 1-3, 2006.
- **Resource Faculty**, Ten Academic Development Programmes in Basic Process Engineering for the Employees of Bharat Aluminum Company Limited (BALCO), Korba and Hindustan Zinc Limited (HZL), Udaipur Organized by BITS Pilani between 2006 - 2010.

8.2 Workshop/Training Programme Attended

- 5th Summer School Programme on *Petroleum Refining & Petrochemicals* organized by PETROTECH Society, Indian Oil Corporation Ltd-R&D and Institute of Indian Oil and Petroleum Management, Gurgoan, June 7–11, 2010.
- Workshop on *Intellectual Property Rights (IPR)* organized by BITS, PILANI (Rajasthan), April 25, 2010.
- Training Programme on *Measurement Uncertainty* organized by Bureau of Indian Standards (BIS), New Delhi, August 21–24, 2004.
- Vocational training at Hindustan Zinc Limited, Zinc Smelter, Debari, (Rajasthan) for six weeks after B Tech

3rd year in roasting gas plant, sulfuric plant, leaching plant, electrolysis plant sections.

8.3 Conference/Seminar attended

1. A Conference on Technological Advancements in Chemical and Environmental Engineering (TACEE-2012), BITS Pilani, March 23-24, 2012.
2. International Conference on Sustainable Manufacturing (ICSM-2011). Birla Institute of Technology and Science (BITS), Pilani, November 10-12, 2011.
3. 2010 Annual Meeting of AIChE, Salt Convention Centre, **Salt Lake City, UT, USA**, November 7-12, 2010.
4. International Symposium & 61st Annual Session of IChE in association with International Partners (CHEMCON-2008), Punjab University, Chandigarh, December 27-30, 2008.
5. International Convention of Water Resources Development and Management (ICWRDM-2008), BITS-Pilani, October 23-26, 2008.
6. Asian Polymer Association's International Conference on Advances in Polymer Science & Technology (Poly-2008), India Habitat Centre, New Delhi, January 28-31, 2008.
7. International Symposium & 59th Annual Session of IChE in association with International Partners (CHEMCON-2006), GNFC Complex, Bharuch, December 27-30, 2006.
8. National Conference on Environmental Conservation (*NCEC-2006*), BITS-Pilani, September 1-3, 2006.
9. International Congress of Chemistry and Environment (ICCE – 2005), Indore, India, December 24-26, 2005.
10. National Seminar on Polymer Research in India at MNNIT Allahabad, India, September, 2004.

9. BOOKS/JOURNALS REVIEWER

9.1 Books: 03

- Badger, W. L., Banchero, J. T. Introduction to Chemical Engineering, Tata McGraw – Hill Higher Education (1997).
- Smith, J. M., Van Ness, H. C., Abbott, M. M. Introduction to Chemical Engineering Thermodynamics, Seventh Ed., McGraw – Hill Higher Education (2005)
- Script on Process Instrumentation and Control, Tata McGraw – Hill Higher Education 2010.

9.2 Journals: 14

- Journal of Chemical and Engineering Data (American Chemical Society)
- Industrial and Engineering Chemistry Research (American Chemical Society)
- Biotechnology and Bioprocess Engineering (Springer)
- Desalination (Elsevier)
- Desalination and Water Treatment (Tailors and Francis)
- International Journal of Green Energy (Tailors and Francis)
- Journal of the Polymers and Environment (Springer)
- Applied Biochemistry and Biotechnology (Springer)
- Chemical & Biochemical Engineering Quarterly (Croatian Society of Chemical Engineers)

10. PROFESSIONAL MEMBERSHIPS

- Life Associate Member of Indian Institute of Chemical Engineers (**IChE**) – (LAM 31849)
- Member of American Institute of Chemical Engineers (**AIChE**) – (009900056224)
- Executive Committee Member, Regional Centre of **IChE**, Pilani.

11. AWARDS/ACHIEVEMENTS

- Awarded Research Project of Rs. 20.5 Lakhs by DST, New Delhi (India) under Fast Track Scheme For Young Scientists, 2012-2014.
- Awarded Travel Grant to attend conference abroad (2011) by INSA-CICS, Chennai.
- Awarded Travel Grant to attend conference abroad (2010) by DST New Delhi.

- Awarded GATE scholarship during M Tech at IIT, Kanpur
- Prize in model exhibition in B Tech programme at HBTI, Kanpur (UP), 1998
- National scholarship for the performance in High school (10th), 1993

12. ADMINISTRATIVE/ACADEMIC POSITIONS AT BITS PILANI

- Member, Departmental Research Committee, Department of Chemical Engineering, 2011-2013.
- Member, Departmental Curriculum Re-Design Committee, Department of Chemical Engineering, 2010-11.
- Member, Committee for Modernization and Development of PG and UG Chemical Engineering Laboratories.
- Member, Committee, Project Fund Utilization of Rs. 65 Lakhs by funded UGC:DRS:SAP for Development Chemical Engineering Department, 2011-2014.
- Member, DST Fist Implementation Committee for Grant of Rs. 75 Lakhs in Chemical Engineering Department, 2012-2016
- Coordinator, Conducting BITS Admission Test at Different Centers (Lucknow, Indore and Delhi).

13. COMPUTER SKILLS

- Programming ability: MATLAB and C
- Professional Software Packages: COSMOthermX, ASPEN PLUS, MATLAB and ORIGIN 6.0 & 8.0

14. EXTRACURRICULAR ACTIVITIES

- Member of Birla Institutions Community Club, Pilani.
- Member of Staff Association Club of BITS, Pilani.
- Member of Faculty Cricket Team, BITS, Pilani
- Secretary of security cell in Antragni 2001 at IIT, Kanpur (UP)
- Executive member of hobby club in 2000 at HBTI, Kanpur (UP)
- Executive member of N.S.S. from 1998 to 2000 at HBTI, Kanpur (UP)
- Student secretary of photography club in 1998 at HBTI, Kanpur (UP)

Date:

(Dr Sushil Kumar)