

## Publications

### i. Journal papers:

- 1) Abhi Manjunath Dasari, Nisarg Ashish Kothari, Gaurav Reddy, Kushal Dhinoja, Sandip Roy, 2024. Optimization of process plant layout using critical risk metrics, *AIChE Journal*, DOI: 10.1002/aic.18596.
- 2) Sandip Roy (2022). Optimizing Safety Budget Allocation in the Process Industry using Risk Metrics, *Journal of Loss Prevention in the Process Industries*, 79, 104832, <https://doi.org/10.1016/j.jlp.2022.104832>.
- 3) Mriganka Mondal, Sandip Roy, and Mamata Mukhopadhyay, 2022. Process Intensification of Cooling Crystallization of Cholesterol from Acetone Solution using CO<sub>2</sub> Gas Bubbles: Experiments and Modeling. *Chemical Engineering and Processing: Process Intensification*, 108794, <https://doi.org/10.1016/j.cep.2022.108794>.
- 4) Sandip Roy. 2022. Establishment of Risk Acceptance Criteria using Life Quality Index: Application to the Indian Context, *Risk Analysis*, 1-11, <https://doi.org/10.1111/risa.13891>.
- 5) Sandip Roy, 2021. Risk-informed land-use planning in the Indian context: A social cost-benefit analysis, *Land Use Policy*, 108, 105684, <https://doi.org/10.1016/j.landusepol.2021.105684>.
- 6) Sandip Roy, Shital D. Bachchhav, and Mamata Mukhopadhyay, 2021. Analysis of the Mechanism of Cholesterol Particle Formation by Liquid Antisolvent Crystallization, *Ind. Eng. Chem. Res.*, 60, 7975–7986 <https://doi.org/10.1021/acs.iecr.1c00335>.
- 7) Sandip Roy, and Rohit Kshirsagar, 2021. Development of risk acceptance criteria in the Indian context, *Process Safety and Environmental Protection*, 148, 358-369, <https://doi.org/10.1016/j.psep.2020.10.021>.
- 8) Shital D. Bachchhav, Sandip Roy, and Mamata Mukhopadhyay, 2021. Effect of solution nonideality on cholesterol supersaturation for liquid antisolvent crystallization, *Chemical Engineering Communications*, <https://doi.org/10.1080/00986445.2021.1951717>.
- 9) Sandip Roy, Ankit Gupta, 2020. Safety Investment Optimization in Process Industry: A Risk-based Approach, *Journal of Loss Prevention in the Process Industries*, 63, 104022, <https://doi.org/10.1016/j.jlp.2019.104022>.
- 10) Suparna Gharpure, Sandip Roy, Pooja Purang and Surajit Bhattacharyya, 2018. Role of Cultural Dimensions in Safety Performance of Global Oil and Gas Industry, *Recent Advances in Petrochemical Science*, Volume 5 Issue 1 - April, DOI: 10.19080/RAPSCI.2018.05.555653.
- 11) Mriganka Mondal, Sandip Roy, and Mamata Mukhopadhyay, 2017. Role of In-Situ Generated CO<sub>2</sub> Bubbles in Heterogeneous Nucleation of Solid Solutes in the Precipitation by Pressure

- Reduction of Gas-Expanded Liquid (PPRGEL) Process, *Ind. Eng. Chem. Res.*, 56 (33), 9331–9340, doi: 10.1021/acs.iecr.7b01105.
- 12) Shital D Bachchhav, S. Roy, M. Mukhopadhyay, 2016. Parametric Analysis of Homogeneous and Heterogeneous Nucleation in Subcritical CO<sub>2</sub>-Mediated Antisolvent Crystallization, *Chemical Engineering Research and Design*, 106, 283.
  - 13) Mriganka Mondal, Sandip Roy, and Mamata Mukhopadhyay, 2015. Engineering Micro/Nanoparticles by PPRGEL Process through Parametric Analysis, *Ind. Eng. Chem. Res.*, 2015, Vol. 54 (13), pp. 3451–3461, DOI: 10.1021/ie504960u.
  - 14) A. Sengupta, D. Bandyopadhyay, S. Roy, C.J. van Westen, A. van der Veen, 2016. Challenges for introducing risk assessment into land use planning decisions in an Indian context, *Journal of Loss Prevention in Process Industries*, 42, 14-26, doi: 10.1016/j.jlp.2015.10.007.
  - 15) Sen, Akhil, Roy, S., and Juvekar, V. A., 2012. On the Importance of Purification of Sodium Polystyrene Sulfonate (NaPSS), *ISRN: Analytical Chemistry*, Article ID 514509, <https://doi.org/10.5402/2012/514509>.
  - 16) Dadhich, V., and Roy, S., 2010. Availability-based optimization of preventive maintenance schedule: A parametric study, *Chemical Engineering Transactions*, Vol 21, DOI:10.3303/CET1021159
  - 17) Ghosh, D. and Roy, S, 2010. A Decision-making Framework for Process Plant Maintenance, in *European Journal of Industrial Engineering*, 4(1), 78.
  - 18) Sharma, M., K., Roy, S., and Khilar, K. C., 2009. Development and Characterization of Polyethyl methacrylate-Iron oxide (III) based Hydrophobic Liquid Nanocomposite Films", *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 346, 123.
  - 19) Singh, Meenesh R.; Roy, Sandip; and Bellare, Jayesh R., 2009. Influence of Cryogenic Grinding on Release of Protein and DNA from *Saccharomyces cerevisiae*, *International Journal of Food Engineering*: Vol. 5:1, Article 1.
  - 20) Ghosh, D., and Roy, S., 2009. Maintenance Optimization using Probabilistic Cost Benefit Analysis, *Journal of Loss Prevention in Process Industries*, 22(4), 403-407.
  - 21) Sen, Akhil, Roy, S., and Juvekar, V. A., 2007. Effect of Structure on Solution and Interfacial Properties of Sodium Polystyrene Sulfonate (NaPSS), *Polym. Int.*, 56, 167.
  - 22) Roy, S., Globalization and the Chemical Industry", 2002. *Chemical World*, 9(1), 28.
  - 23) Hasnat, A., and Roy, S., 1999. Microphase Enhanced Reactions: Simultaneous Effects of Ion Coupling and Counterion Binding, *I & EC Res*, 38, 4571.
  - 24) Hasnat, A., and Roy, S., 1998. Intensification of Instantaneous Heterogeneous Reactions by Simple Inert Electrolytes and Charged Microphase, *AIChE Journal*, 44(3), 656.

- 25) Roy, S., Mehra, A., Bhowmick, D., 1997. "Prediction of Solubility of Nonpolar Gases in Micellar Solutions of Ionic surfactants", *Journal of Colloid and Interface Science*, 196, 53.
- 26) Mukhopadhyay, M., Roy S., Pandit, S., Baser, S., 1997. Emergence of Supercritical Fluid Extraction as cost-effective and Ecofriendly Technology, *Indian Chemical Engineer*, 39(3), 263.
- 27) Mukhopadhyay, M., Roy S., Pandit, S., Baser, S., 1997. Supercritical Fluid Extraction Systems Design and Commercialization", *Chemical Weekly*, 171, Nov. 18.
- 28) Ohki, S., Roy, S., Ohshima, H. Leonards K., 1984. "Monovalent Cation Induced Phospholipid Vesicle Aggregation: Effect of Ion Binding", *Biochemistry*, 23, 6126.
- 29) Stroeve, P., Ruckenstein, E., Roy, S., 1983. "Controlled Release of Surface-Active Drugs through Polymeric Membranes", *AIChE Symposium Series*, 227, 11.
- 30) Roy, S., Ruckenstein, E., and Stroeve, P., 1983. "Diffusion of a Non-ionic surfactant through Polymeric Nonporous and Porous Membranes", *Journal of Colloid Interface Sci.*, 92, 383.

## ii. Refereed conference papers:

***All papers enlisted below were presented orally in the respective conferences.***

- 1) Roy, S., 2018. "Safety Investment Optimization in Chemical Process Industry", *Proceedings of the 6<sup>th</sup> International Conference on Green Process Engineering*, June 3-6, Toulouse, France.
- 2) Shital D. Bachchhav, Sandip Roy, Mamata Mukhopadhyay, 2017. "Analysis of Thermodynamic Non-Ideality in Computation of Supersaturation in Liquid Antisolvent Precipitation", in *24<sup>th</sup> International Workshop on Industrial Crystallization*, 29-31 August, Dortmund, Germany.
- 3) Shital D. Bachchhav, Sandip Roy, Mamata Mukhopadhyay, 2017. "Influence of Antisolvent Composition and Temperature on the Cholesterol Solubility in Aqueous Ethanol", in *20<sup>th</sup> International Symposium on Industrial Crystallization*, Dublin, 3-6 September, Abstract accepted for presentation.
- 4) Mriganka Mondal, Sandip Roy, and Mamata Mukhopadhyay, 2017. "Effect of Gas Bubbles on Heterogeneous Nucleation of Solid Solute, in *20<sup>th</sup> International Symposium on Industrial Crystallization*, Dublin, 3-6 September, Abstract accepted for presentation.
- 5) Ankit Gupta and Sandip Roy, 2017. *Proceedings of the International Conference on Safety, Indian Institute of Technology Gandhinagar, Ahmedabad, India*, Jan 1-3.
- 6) Roy, S., 2016. "Improving EIA and LUP Practice in India: Challenges and Approaches", *Proceedings of the 5<sup>th</sup> International Conference on Green Process Engineering*, June 19-24, Mont Tremblant, Quebec, Canada.

- 7) Roy, S., 2014. "Determining Individual Public Risk Acceptance Criteria: An Economic Model", presented in the *International Conference on Safety, Indian Institute of Technology Gandhinagar, Ahmedabad, India*.
- 8) Mondal, Mriganka; Roy, Sandip; Mukhopadhyay, Mamata, 2014. "Analysis of Mechanism of Formation of Micro-particles in PPRGEL Process Using Subcritical Carbon Dioxide", in the *Proceedings of the 4<sup>th</sup> International Conference on Green Process Engineering, Seville, Spain*.
- 9) Roy, S., 2014. "Developing Chemical Process Risk Acceptance Criteria Using Life Quality Index", in the *Proceedings of the 4<sup>th</sup> International Conference on Green Process Engineering, Seville, Spain*.
- 10) Dajibhai, S, Roy, S., and Mukhopadhyay, M., 2013. "Tailoring of Subcritical CO<sub>2</sub> Gas-Expanded Liquid Solutions for Producing Nanoparticles" in the *Proceedings of the 66<sup>th</sup> Annual Session of Indian Institute of Chemical Engineers, Chemcon*, at ICT, Mumbai, 27 – 30 December.
- 11) Gwalini, R., and Roy, S., 2011. "Optimal Scheduling of Condition-based Predictive Maintenance" in the *Proceedings of 8<sup>th</sup> European Congress of Chemical Engineering*, September 25 - 29, ICC Berlin, Germany.
- 12) Dadhich, V., and Roy, S., 2010. "Availability-based optimization of preventive maintenance schedule" in the *Proceedings of 7<sup>th</sup> European Congress of Chemical Engineering*, 28 August - 1 September, Prague, Czech Republic.
- 13) Ghosh, D., and Roy, S., 2009. "Decision-Making Framework for Sustainable Maintenance Management in Process Plants" in the *Proceedings of 2<sup>nd</sup> European Process Intensification Conference*, Venice - Italy, 14 - 17 June.
- 14) Roy, S., 1994. "Role of Particle Reorientation and Particle-Polymer Interaction Potential in Bridging Flocculation of Colloidal Particles", in *Proceedings of CHEMCON' 94, 47<sup>th</sup> Annual Session of IChE (IIT, Kharagpur)*.
- 15) Biswas, M., and Roy, S., 1994. "Simulation of Bridging Flocculation in Colloidal Systems", in *Proceedings of the 6<sup>th</sup> National Conference on Surfactants, Emulsions, and Biocolloids (CLRI, Madras)*.

### iii. Conference presentations (not included in ii):

***All papers enlisted below were presented orally in the respective conferences.***

- 1) Roy, S., 2021, "The Cultural Context of Process Safety", presented at the *6<sup>th</sup> Global Summit on Process Safety*, Centre for Chemical Process Safety, AIChE, 6-8 December.
- 2) Roy, S., 2021. Managing Major Accident Hazards: Reflections on the Cultural Context, in the *37<sup>th</sup> DAE Safety and Occupational Health Professionals Meet*, Mumbai,

- 3) Roy, S., 2006. "Risk-based Management of Change", in *3<sup>rd</sup> Safety Conference: Role of Health, Safety and Environment in Oil & Gas Industry for Sustainable Development* IPSHEM (ONGC), Goa, December 1-2.
- 4) Roy, S., 2004. "Recent Developments in the Assessment of Inherent Safety of Process Plants", in *2<sup>nd</sup> Safety Conference: Applications of Technologies and Emerging Trends Towards Effective Loss Control*, IPSHEM (ONGC), Goa, December 1-3.
- 5) Roy, S., 2004. "Using Quantitative Risk Assessment Optimally for Process Safety Management", in *Proceedings of 3<sup>rd</sup> Indian Congress on Quality, Environment, Energy and Safety Management Systems & 1<sup>st</sup> National Conference on Business Excellence*, February 5-7, Jadavpur University, Kolkata.
- 6) Roy, S., 2004. "Adapting Total Quality Management in the Academia," in *Proceedings of 3<sup>rd</sup> Indian Congress on Quality, Environment, Energy and Safety Management Systems & 1<sup>st</sup> National Conference on Business Excellence*, February 5-7, 2004, Jadavpur University, Kolkata.
- 7) Sen., P. K., and Roy, S. 2003. "Determination of Critical Contaminant Particle Diameter in Supercritical CO<sub>2</sub> – based Cleaning", in the *11th National Conference on Surfactants, Emulsions and Biocolloids*, Mumbai.
- 8) Roy, S., 2003. "Managing Technological Innovation: Networking the Academia and the Industry" in the *Proceedings of the National Seminar on Knowledge Networking between the Academia and the Industry*, pg 35-45, February, Jadavpur University, Kolkata.
- 9) Roy, S., 2002. "Globalization and the Chemical Industry: Realities and Responses", in *Proceedings of Seminar on "The Impact of Globalization on the Indian Industry"*, Central Glass and Ceramic Research Institute, Kolkata, 8 & 9 February.
- 10) Roy, S., and Kumar, A., 2001. "Simulation of Polymer-mediated Flocculation of Colloidal Particles," in *Proceedings of 10<sup>th</sup> National Conference on Surfactants, Emulsions and Biocolloids*, Shillong, 3-5 Oct.
- 11) Venkatesh, V., and Roy, S., 2000. "Use of Reverse Micelles in Supercritical CO<sub>2</sub> for Extraction of Polar Natural Substances", *Indian Chemical Engineering Congress*, 18 - 21 December, Calcutta.
- 12) Mukhopadhyay, M., Roy S., Baser, S., 1999. Supercritical Fluid Extraction of Neem: Technical and Commercial Feasibility Aspects", in *Proceedings of the "Workshop on Neem – Based Industry: Techno-Commercial Aspects"*, National Botanical Research Institute, Lucknow, (26-27 October).
- 13) Hasnat, A., and Roy, S., 1999. "Microphase Enhanced Reaction: Effects of Ion – Coupling and Counterion Binding", in *Proceedings of the 9th National Conference on Surfactants, Emulsions and Biocolloids*, Kalyani.

- 14) Mukhopadhyay, M., Roy, S., Baser, S., 1995. "On the Cost-Effectiveness of Supercritical Fluid Extraction Plant", in *Proceedings of the Asian Symposium on Supercritical Fluid Extraction Technology for Natural Products*, (IIT, Delhi).
- 15) Hasnat, A., and Roy, S., 1991. "Intensification of Instantaneous Heterogeneous Reactions" in *Proceedings of 5<sup>th</sup> National Conference on Surfactants, Emulsions and Biocolloids*, (M.S. University, Baroda).
- 16) Tawde, J., and Roy, S., 1991. "Simulation of Bridging flocculation: General considerations", in *Proceedings of the 5<sup>th</sup> National Conference on Surfactants, Emulsions and Biocolloids*, (M. S. University, Baroda).
- 17) Juvekar, V.A., Neogi, S., Gokhale, Y.V., Chatorikar, A.R., and Roy, S., 1989. "Micellar Catalysis of Instantaneous Heterogeneous Reactions", *Proceeding of the 4<sup>th</sup> National Conference on Surfactants, Emulsions and Biocolloids*, (IIT, Bombay).

**iv. Book**

Authored E-book on "Chemical Engineering Thermodynamics", NPTEL Phase II (2012); Course website: <http://nptel.ac.in/courses/103101004/>