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Educational Qualification

◆ PhD	Indian Institute of Technology, Kharagpur	2005
◆ MTech (Masters)	Indian Institute of Technology, Kharagpur	2000
◆ BE (Bachelors)	Jadavpur University	1998

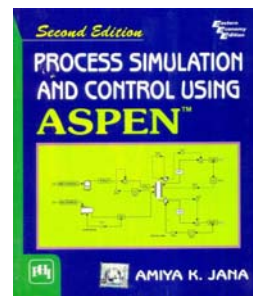
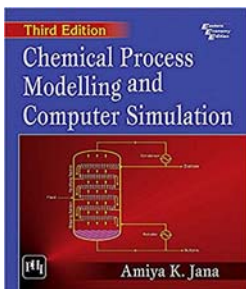
Experience

◆ Visiting Professor	University of Alberta, Edmonton, Canada	May 2013 – Dec 2013
◆ Associate Professor	Indian Institute of Technology, Kharagpur	March 2013 – till date
◆ Assistant Professor	Indian Institute of Technology, Kharagpur	Jan 2007 – Feb 2013

Publications

Text Book

- (1) **Jana, A. K.** (2018). “Chemical Process Modelling and Computer Simulation,” 3rd edn., Prentice-Hall, New Delhi (ISBN: 978-93-87472-07-5): 468 pages.
- (2) **Jana, A. K.** (2012). “Process Simulation and Control using AspenTM,” 2nd edn., Prentice-Hall, New Delhi (ISBN: 978-81-203-4568-3): 372 pages



International Journal

- (111) Dongre J. Harshal, Thakre, N., Palodkar, A. V., **Jana, A. K.** (2020). “Carbon Dioxide Hydrate Dynamics and Crystallography in Pure and Saline Water,” *Crystal Growth and Design* (**Revision Submitted**) [ACS].
- (110) Sankar, K. and **Jana, A. K.** (2020). “Nonlinear Multivariable Control of an Integrated PEM Fuel Cell System with a DC – DC Boost Converter,” *Chemical Engineering Research and Design* (**Revision Submitted**) [Elsevier].
- (109) Thakre, N. and **Jana, A. K.** (2020). “Gas Hydrate Thermodynamics: A Review,” *Renewable & Sustainable Energy Reviews* (**In Press**) [Elsevier].
- (108) Wang Z.Y., Parhi, S. S., Rangaiah, G. P. and **Jana, A. K.** (2020). “Analysis of Weighting and Selection Methods for Pareto-Optimal Solutions of Multi-Objective Optimization in Chemical Engineering Applications,” *Industrial and Engineering Chemistry Research* (**In Press**; DOI: 10.1021/acs.iecr.0c00969) [ACS].
- (107) Chatterjee, A., Shamim, S., **Jana, A. K.**, Basu, J. K. (2020). “Insights into the Competitive Adsorption of Pollutants on a Mesoporous Alumina–Silica Nano-sorbent Synthesized from Coal Fly Ash and a Waste Aluminium Foil,” *RSC Advances*, 10, 15514 – 15522 [RSC].
- (106) Thakre, N. and **Jana, A. K.** (2020). “Nonmonotonous Lattice Distortion Model for Gas Hydrates,” *The Journal of Physical Chemistry A*, 124, 3149 – 3156 [ACS].

- (105) Thakre, N. and **Jana, A. K.** (2020). "A Lattice Distortion Theory for Promoter Containing Clathrate Hydrates," *Scientific Reports* 10, 9622 (DOI: 10.1038/s41598-020-66776-2), pp. 1-15 [**Nature Group**].
- (104) Thakre, N., Palodkar, A. V., Dongre J. H., **Jana, A. K.** (2020). "Microscopic Molecular Insights into Hydrate Formation and Growth in Pure and Saline Water Environments," *The Journal of Physical Chemistry A*, 124, 4241 – 4252 [**ACS**].
- (103) Dongre J. Harshal and **Jana, A. K.** (2020). "Insight into the Thermo-Physics of Hydrate Lattice: Three Phase Equilibrium in Presence of Electrolyte," *The Journal of Chemical Thermodynamics* (**In Press; DOI: 10.1016/j.jct.2020.106182**) [**Elsevier**].
- (102) Parhi, S. S., Pramanik, A., Rangaiah, G. P., **Jana, A. K.** (2020). "Evolutionary Algorithm based Multiobjective Optimization of Vapor Recompressed Batch Extractive Distillation: Assessing Economic Potential and Environmental Impact," *Industrial and Engineering Chemistry Research*, 59, 5032 – 5046 [**ACS**].
- (101) Palodkar, A. V. and **Jana, A. K.** (2020). "Gas Hydrate Dynamics in Distributed Porous Particles with Saltwater: Model Formulation and Experimental Validation," *Chemical Engineering Journal* (**In Press, DOI: 10.1016/j.cej.2019.123660**) [**Elsevier**].
- (100) Palodkar, A. V. and **Jana, A. K.** (2020). "Clathrate Hydrate Dynamics with Synthetic- and Bio-Surfactant in Porous Media: Model Formulation and Validation," *Chemical Engineering Science* (**In Press, DOI: 10.1016/j.ces.2019.115386**) [**Elsevier**].
- (99) **Jana, A. K.** (2020). "Vertical Partition in Fractionating Tower to Configure a Novel Heat Integrated Distillation Hybridized with Vapor Recompression," *Separation and Purification Technology* (**In Press DOI: 10.1016/j.seppur.2019.116153**) [**Elsevier**].
- (98) Srinivas, P. S., Mishra, D. K., Kulkarni, A. K., Gupta, R., Korath, J. M., **Jana, A. K.** (2020). "Investigation of Vortex Flow Patterns at the Meniscus in a Water Caster Mould", *Canadian Metallurgical Quarterly*, 59, 211 – 232 [**Taylor & Francis**].
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- (95) Mandal, S. and **Jana, A. K.** (2020). "Simulating Reactive Distillation of HIX (HI-H₂O-I₂) System in Sulphur-Iodine Cycle for Hydrogen Production," *Nuclear Engineering and Technology*, 52, 279-286 [Elsevier].
- (94) Palodkar, A. V. and **Jana, A. K.** (2019). "Modeling Recovery of Natural Gas from Hydrate Reservoirs with Carbon Dioxide Sequestration: Validation with Ignik Sikumi Field Data," *Scientific Reports*, 9, 18901 (DOI: 10.1038/s41598-019-55476-1), pp. 1-14 [Nature Group].
- (93) Chatterjee, A., Basu, J. K., **Jana, A. K.** (2019). "Alumina-Silica Nano-Sorbent from Plant Fly Ash and Scrap Aluminium Foil in Removing Nickel through Adsorption," *Powder Technology*, 354, 792-803 [Elsevier].
- (92) Mondal, B. and **Jana, A. K.** (2019). "Techno-Economic Feasibility of Reactive Distillation for Biodiesel Production from Algal Oil: Comparing with a Conventional Multiunit System," *Industrial and Engineering Chemistry Research*, 58, 12028 – 12040 [ACS].
- (91) Aurangzeb, Md. and **Jana, A. K.** (2019). "A Novel Heat Integrated Extractive Dividing Wall Column for Ethanol Dehydration," *Industrial and Engineering Chemistry Research*, 58, 9109 – 9117 [ACS].
- (90) Parhi, S. S., Rangaiah, G. P. and **Jana, A. K.** (2019). "Vapor Recompressed Batch Distillation: Optimizing Reflux Ratio at Variable Mode," *Computers and Chemical Engineering*, 124, 184 – 196 [Elsevier].
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- (88) Srinivas, P. S., Mishra, D. K., Gupta, R., Korath, J. M., **Jana, A. K.** (2019). “Vortex Characteristics due to Nozzle Clogging in Water Caster Mould: Modelling and Validation,” *Canadian Metallurgical Quarterly*, 58, 308 – 324 [**Taylor & Francis**].
- (87) Parhi, S. S., Rangaiah, G. P., **Jana, A. K.** (2019). “Multi-Objective Optimization of Vapor Recompressed Distillation Column in Batch Processing: Improving Energy and Cost Savings,” *Applied Thermal Engineering*, 150, 1273 – 1296 [**Elsevier**].
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- (84) Thakre, N. and **Jana, A. K.** (2019). “Computing Anisotropic Cavity Potential for Clathrate Hydrates,” *The Journal of Physical Chemistry A*, 123, 2762 – 2770 [**ACS**].
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- (72) Thakre, N. and **Jana, A. K.** (2017). “Modeling Phase Equilibrium with a Modified Wong-Sandler Mixing Rule for Natural Gas Hydrates: Experimental Validation,” *Applied Energy*, 205, 749 – 760 [Elsevier].
- (71) Banerjee, S. and **Jana, A. K.** (2017). “Internally Heat Integrated Batch Distillation: Vapor Recompression and Nonlinear Control,” *Separation and Purification Technology*, 189, 267 – 278 [Elsevier].
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- (67) **Jana, A. K.** (2017). “A Thermally Coupled Dividing Tower Batch Rectifier: Energy Consumption and Cost,” *Applied Thermal Engineering*, 119, 610 – 616 [**Elsevier**].
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- (55) **Jana, A. K.** (2015). “An Energy-Efficient Cost-Effective Transient Batch Rectifier with Bottom Flashing: Process Dynamics and Control,” *AIChE Journal*, 61, 3699 – 3707 [**Wiley**].
- (54) Sivaramakrishnan, K, Huang, B., and **Jana, A. K.** (2015). “Predicting Wellbore Dynamics in a Steam-assisted Gravity Drainage System: Numeric and Semi-Analytic Model, and Validation,” *Applied Thermal Engineering*, 91, 679 – 686 [**Elsevier**].
- (53) Kiran, B. and **Jana, A. K.** (2015). “A Hybrid Heat Integration Scheme for Bioethanol Separation through Pressure-Swing Distillation Route,” *Separation and Purification Technology*, 142, 307 – 315 [**Elsevier**].
- (52) Kiran, B. and **Jana, A. K.** (2015). “Assessing the Performance Improvement of an Intensified Heat Integration Scheme: Reactive Pressure-Swing Distillation,” *Applied Thermal Engineering*, 76, 509 – 520 [**Elsevier**].
- (51) **Jana, A. K.** (2015). “A Novel Energy-Efficient Batch Stripper: Thermodynamic Feasibility, Cost Analysis and CO₂ Emissions,” *Applied Thermal Engineering*, 84, 292 – 300 [**Elsevier**].

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- (47) **Jana, A. K.** (2014). “Advances in Heat Pump assisted Distillation Column: A Review,” *Energy Conversion and Management*, 77, 287-297 [**Elsevier**].
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- (43) Mandal, S. and **Jana, A. K.** (2013). “Prediction of Phase Equilibria of HIX System using Artificial Neural Network: Experimental Verification,” *International Journal of Hydrogen Energy*, 38, 1244-1250 [**Elsevier**].
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- (11) **Jana, A. K.** (2007). "Nonlinear State Estimation and Generic Model Control of a Continuous Stirred Tank Reactor," *Int. J. Chemical Reactor Engineering*, 5, A42, 1-16 (**Invited Article**) [**Berkeley Electronic Press**].
- (10) **Jana, A. K.**, Ganguly, S. and Samanta, A. N. (2007). "Non-linear Control of a Distillation Column Coupled with MPC and State Observer," *Int. J. Modelling, Identification and Control*, 2, 88-99 [**Inderscience**].
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- (7) **Jana, A. K.** (2007). "Synthesis of Nonlinear Adaptive Controller for a Batch Distillation," *ISA Transactions*, 46, 49-57 [**Elsevier**].
- (6) **Jana, A. K.**, Ganguly, S. and Samanta, A. N. (2006). "Nonlinear Control of a Multicomponent Distillation Process Coupled with A Binary Distillation Model as an EKF Predictor," *ISA Transactions*, 45, 575-588 [**Elsevier**].
- (5) **Jana, A. K.**, Samanta, A. N. and Ganguly, S. (2006). "Observer-based Control Algorithms for a Distillation Column," *Chemical Engineering Science*, 61, 4071-4085 [**Elsevier**].
- (4) **Jana, A. K.** and Samanta, A. N. (2006). "A Hybrid Feedback Linearizing-Kalman Filtering Control Algorithm for a Distillation Column," *ISA Transactions*, 45, 87-98 [**Elsevier**].
- (3) **Jana, A. K.**, Samanta, A. N. and Ganguly, S. (2005). "Globally Linearized Control on Diabatic Continuous Stirred Tank Reactor: A Case Study," *ISA Transactions*, 44, 423-444 [**Elsevier**].
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Sponsored Projects

- 1. Title:** Nonlinear state estimation and control of a heterogeneously catalyzed reactor
Sponsor: ISIRD, IIT Kharagpur
Duration: January 2008 – January 2011
Principal Investigator: Amiya K. Jana
- 2. Title:** Design, analysis and control of internally heat integrated distillation columns
Sponsor: Department of Science and Technology (DST), Govt. of India
Duration: October 2009 – October 2012
Principal Investigator: Amiya K. Jana
- 3. Title:** Design, Modeling and Control of a High Pressure Pilot Scale HIX Reactive Distillation
Sponsor: Department of Atomic Energy (DAE), BARC, Govt. of India
Duration: February 2010 – March 2013
Principal Investigator: Amiya K. Jana
- 4. Title:** Modeling, Analysis and Control of Reactive Distillation Columns
Sponsor: Council of Scientific and Industrial Research (CSIR), Govt. of India
Duration: May 2010 – March 2014
Principal Investigator: Amiya K. Jana
- 5. Title:** Virtual Lab on Chemical Process Dynamics
Sponsor: Ministry of Human Resource and Development (MHRD), Govt. of India
Duration: June 2010 – Till date
Principal Investigator: Amiya K. Jana & Somenath Ganguly
- 6. Title:** Economic Feasibility of a Novel Thermally Integrated Batch Distillation to Reduce Energy use
Sponsor: Council of Scientific and Industrial Research (CSIR), Govt. of India

Duration: January 2016 – December 2019

Principal Investigator: Amiya K. Jana

Research Supervision

- ◆ PhD Awarded 6 (4 single-guidance) + 2 (submitted; single-guidance)
- ◆ PhD in Progress 9 (single-guidance: 6)
- ◆ M. Tech. Awarded 59
- ◆ M. Tech. in Progress 3 (2020-21)

Awards & Recognition

- ◆ Fellow of the Alexander von Humboldt Foundation, Germany 2016
- ◆ Visiting Fellow: Max Planck Institute, Magdeburg, Germany, June 2015
- ◆ Academic Visitor: National University of Singapore, Singapore, May 2015
- ◆ Visiting Professor: University of Alberta, Edmonton, Canada (May–December, 2013)
- ◆ Editorial Board Member: ISRN Industrial Engineering (Hindawi Publisher, USA)

Research Areas

- ◆ Energy and fuels
- ◆ Gas hydrates
- ◆ Process intensification
- ◆ Nonlinear control
- ◆ Thermodynamic phase equilibrium
- ◆ Fuel cell

Courses Taught

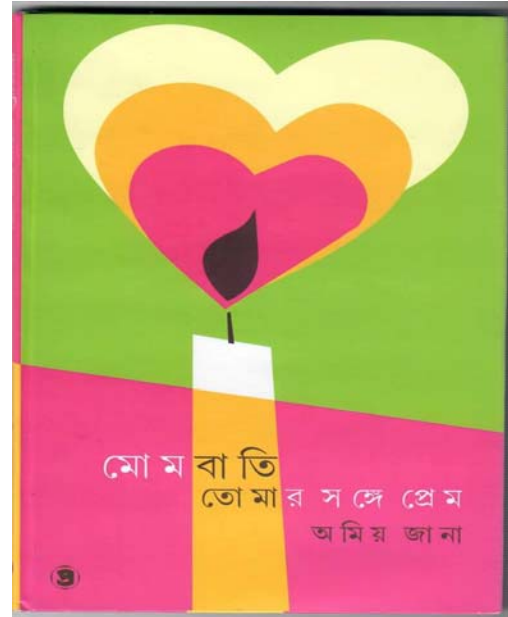
- ◆ Instrumentation and process control (UG level) [**developed video lecture under NPTEL**]
- ◆ Process dynamics and control (PG level)
- ◆ Advanced process control (PG level)
- ◆ Advanced heat transfer (PG level)

- ◆ Mass transfer (UG level)
- ◆ Computer methods in chemical engineering (UG level)

Extra-Curricular

Creative writing

1. Published a poetry book in Kolkata Book fair 2020 (Sonadhulor Prithibi)
2. Published a poetry book in Kolkata Book fair 2019 (Mombati Tomar Songe Prem)



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