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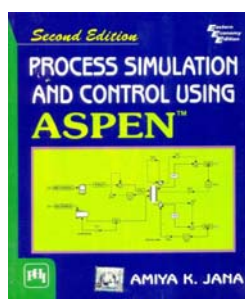
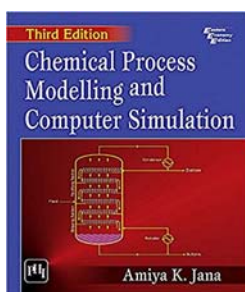
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## Publications

### Text Book

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



## International Journal (selected publications)

- (121) Palodkar, A. V., Dongre, J. H., Thakre, N., **Jana, A. K.** (2022). “Microsecond Molecular Dynamics of Methane – Carbon Dioxide Swapping in Pure and Saline Water Environment,” *Scientific Reports* 12, 2634 (DOI: 10.1038/s41598-022-06583-z), pp. 1-16 [Nature Group].
- (120) Thakre, N. and **Jana, A. K.** (2022). “Predicting Phase Equilibrium of Pure and Mixed Refrigerant Gas Hydrates: ab initio Assisted Lattice Distortion Theory,” *AIChE Journal* (In Press, DOI: DOI:10.1002/aic.17463) [Wiley].
- (119) Dongre, J. H. and **Jana, A. K.** (2022). “Formulating Noncovalent Interactions to Predict Structural Transition in Mixed Guest Hydrates,” *AIChE Journal* (In Press, DOI: 10.1002/aic.17670) [Wiley].
- (118) Pandit, S. R. and **Jana, A. K.** (2022). “Transforming Conventional Distillation Sequence to Dividing Wall Column: Minimizing Cost, Energy Usage and Environmental Impact through Genetic Algorithm,” *Separation and Purification Technology* (In Press, DOI: 10.1016/j.seppur.2022.121437) [Elsevier].
- (117) Mondal, B. and **Jana, A. K.** (2022). “Optimal Reflux Splitting Reactive Distillation for Algal Biodiesel Production: Waste Heat Recovery through Vapor Recompression and Organic Rankine Cycle,” *Separation and Purification Technology* (In Press, DOI: 10.1016/j.seppur.2022.121007) [Elsevier].
- (116) **Jana, A. K.** (2022). “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].
- (115) Thakre, N. and **Jana, A. K.** (2022). “Physical and Molecular Insights to Clathrate Hydrate Thermodynamics,” *Renewable & Sustainable Energy Reviews* (In Press, DOI: 10.1016/j.rser.2020.110150) [Elsevier].
- (114) Palodkar, A. V. and **Jana, A. K.** (2022). “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].

- (113) Palodkar, A. V. and **Jana, A. K.** (2022). "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**].
- (112) Mondal, B., Parhi, S. S., Rangaiah, G. P. and **Jana, A. K.** (2022). "Nano-Catalytic Heterogeneous Reactive Distillation for Algal Biodiesel Production: Multi-Objective Optimization and Heat Integration," *Energy Conversion and Management* (**In Press, DOI:** /10.1016/j.enconman.2021.114298) [**Elsevier**].
- (111) Dhamu, V., Thakre, N., **Jana, A. K.** (2022). "Structure-H Hydrate of Mixed Gases: Phase Equilibrium Modeling and Experimental Validation," *Journal of Molecular Liquids* (**In Press, DOI:** 10.1016/j.molliq.2021.117605) [**Elsevier**].
- (110) Parhi, S. S., Rangaiah, G. P. and **Jana, A. K.** (2022). "A Novel Vapor Recompressed Batch Extractive Distillation: Design and Retrofitting," *Separation and Purification Technology* (**In Press, DOI:** 10.1016/j.seppur.2020.118225) [**Elsevier**].
- (109) Dongre, J. H. and **Jana, A. K.** (2022). "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**].
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- (106) Chatterjee, A., **Jana, A. K.**, Basu, J. K. (2022). "Silica Supported Binary Metal Organic Framework for Removing Organic Dye Involving Combined Effect of Adsorption Followed by Photocatalytic Degradation," *Materials Research Bulletin* (**In Press, DOI:** 10.1016/j.materresbull.2021.111227) [**Elsevier**].

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- (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**].
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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 – December 2018  
**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

**Date of Commencement:** January 2016 – March 2021

**Principal Investigator:** Amiya K. Jana

7. **Title:** Improvement of Benzyle Alcohol Production Process

**Sponsor:** LANXESS India Private Ltd.

**Date of Commencement:** 01 December, 2019

**PI:** Jayanta Chakraborty

**Co-PI:** Amiya K. Jana

## Research Supervision

- ◆ PhD Completed                    12 (8 single-guidance)
- ◆ PhD in Progress                    7 (6 single-guidance)
- ◆ MTech Completed                    64
- ◆ MTech. in Progress                    4 (2022-23)

## Awards & Recognition

- ◆ Faculty Excellence Award 2021 (for Outstanding Contributions towards Research, Teaching and Institutional Development) by IIT Kharagpur, 2021
- ◆ Listed in the “World’s Top 2% Scientists”, by Stanford University, 2020 & 2021
- ◆ Fellow of the Alexander von Humboldt Foundation, Germany 2017
- ◆ Editorial Board Member: Journal of Engineering (Hindawi Publisher, USA), 2018 –
- ◆ Editorial Board Member: Frontiers in Control Engineering (Frontiers Publisher, Switzerland), 2020 –
- ◆ Excellent Faculty Recognition by Indian oil Management Academy (IMA), 2009

## Research Areas

- ◆ Nonlinear control
- ◆ Renewable energy and clean fuels
- ◆ Process intensification



- ◆ Water
- ◆ 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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