



Dr. Ghoshna Jyoti

Assistant Professor
Department of Chemical Engineering
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Education

Ph.D (Doctor of Philosophy) in Chemical Engineering (2013 – 2018)
National Institute of Technology Raipur, Chhattisgarh, India.

Broad Research Area: “Experimental and Computational study on Esterification-Pervaporation Integrated System”

Key features of research:

- Experiments on homogeneous as well as heterogeneous catalytic esterification reaction of acrylic acid with ethanol, and effect of different reaction parameters on the reaction kinetics.
- Estimation of kinetic parameters and development of the models (concentration based and activity based model) for esterification process with experimental validation.
- Experiments on homogeneous catalytic esterification pervaporation integrated system of acrylic acid with ethanol, comparison the obtained results with non-integrated system (esterification reaction), and effect of different operating parameters on the reaction kinetics and pervaporation performance.
- Estimation of kinetic parameters by a nonlinear optimization technique and development of the models for pervaporation-esterification hybrid process with experimental validation.
- Development of response model equation by regression analysis using Box-Behnken design and optimization of the hybrid process from Response Optimizer.

M.Tech (Master of Technology) in Chemical Engineering (2010-2012)
National Institute of Technology Rourkela, Odisha, India.

B.Tech (Bachelor of Technology) in Chemical Engineering (2005-2009)
National Institute of Technology Raipur, Chhattisgarh, India.

Areas of Expertise

- Process intensification (Pervaporation)
- Reaction Engineering and Catalysis
- Process modelling and simulation
- Process Design

Work Experience

- Assistant Professor Dec 2019 to till date
Institute of Technology
Department of Chemical Engineering
ITGGV (A central university), Bilaspur (C.G.)
- Temporary Faculty July 2018 to Dec 2019
Department of Chemical Engineering, July 2012 to May 2013
NIT Raipur (C.G.)

Publications

1. **Ghoshna Jyoti**, Shabina Khanam. 2014. "Simulation of heat integrated multiple effect evaporator system." *International Journal of Thermal Sciences* 76, 110-117.
2. **Ghoshna Jyoti**, Amit Keshav, J. Anandkumar. 2015. "Review on pervaporation: Theory, membrane performance and application to intensification of esterification reaction." Hindawi Publishing Corporation, *Journal of Engineering*. Volume 2015, Article ID 927068.
3. **Ghoshna Jyoti**, Amit Keshav, J. Anandkumar. 2016. "Experimental and Kinetic Study of Esterification of Acrylic Acid with Ethanol Using Homogeneous Catalyst". *International Journal of Chemical Reactor Engineering* 14 (2), 571-578.
4. **Ghoshna Jyoti**, Amit Keshav, J. Anandkumar. 2017. Esterification of acrylic acid with ethanol using pervaporation membrane reactor. *Korean Journal of Chemical Engineering*. 34(6), 1661–1668.
5. **Ghoshna Jyoti**, Amit Keshav, J. Anandkumar. 2017. "Modeling of esterification-pervaporation integrated system of acrylic acid with ethanol", *Research Journal of Engineering Sciences* 6 (3), 10-15.
6. Rajkishor Choudhary, **Ghoshna Jyoti**, Prabir Ghosh, Ashish N. Sawarkar, Parmesh Kumar Chaudhari. 2017. "Electrocoagulation process to remove contaminants of coking wastewater using aluminum electrode", *Desalination and Water Treatment*, 86, 68–79.
7. **Ghoshna Jyoti**, Amit Keshav, J. Anandkumar, Stutee Bhoi. 2018. Homogeneous and heterogeneous catalyzed esterification of acrylic acid with ethanol: Reaction Kinetics and Modeling. *International journal of Chemical Kinetics* 50, 370-380.
8. **Ghoshna Jyoti**, Amit Keshav, J. Anandkumar. 2019. Optimization of esterification of acrylic acid and ethanol by Box–Behnken design of response surface methodology. *Indian Journal of Chemical Technology*, 26, 89-94.
9. **Ghoshna Jyoti**, Stutee Bhoi, Dileshwar Kumar Sahu. 2019 Production and Isolation of n-Butyl Acrylate using Pervaporation aided Esterification Reaction: Kinetics and Optimization. *Chemical Engineering & Technology*. 42, No. 3, 1–12.

10. Neela Acharya, **Ghoshna Jyoti**, Chandrakant Thakur, Parmesh Kumar Chaudhari. 2020. Treatment of domestic sewage using electrocoagulation followed by ion exchange – parametric and kinetic studies. Desalination and Water Treatment. 1-9.

Conferences

1. **Ghoshna Jyoti** “Design of crystallizer for pharmaceutical effluent”, RACEE-2012
2. Stutee Bhoi, **Ghoshna Jyoti** “Simulation of microchannel reactor using CFD analysis”, ICACE-2013
3. **Ghoshna Jyoti**, P. K. Chaudhari, P. Dhar “Aspen simulation of fired heaters”, ICACE-2013
4. **Ghoshna Jyoti**, Amit Keshav, J. Anandkumar “Modeling and simulation of a pervaporation-esterification coupled reactor”, CHEMCON, Dec. 2014
5. **Ghoshna Jyoti**, Anurag Tiwari, Amit Keshav, “Effect of carbon chain length”, HETIS, Sept. 2014
6. **Ghoshna Jyoti**, Amit Keshav, Anurag Tiwari, J. Anandkumar “Kinetic model for an esterification process of acrylic acid with ethanol using homogeneous catalyst”. ICACE, NITK Surathkal, Dec 2015
7. **Ghoshna Jyoti**, Amit Keshav, J. Anandkumar “Modeling of esterification-pervaporation integrated system of acrylic acid with ethanol”, ISC, Dec. 2016

Seminars/workshops

1. Attended a one day training program on Uses of E-Resources at NIT Raipur
2. Attended the workshop on Academic Ethics and IPR at NIT Raipur
3. Attended the workshop on X-Ray Diffraction and its Application in material engineering at NIT Raipur
4. Attended the workshop on Recent challenges & opportunities in chemical engineering at NIT Raipur

Short term courses

1. Delivered a lecture on “Applications of ASPEN-PLUS in Chemical Engg. Process” in the short term course CPMS-2014 at NIT Raipur.
2. Participated in short term course on Recent trends in Nano-membrane technology organized by Department of Chemical Engineering, VNIT Nagpur.
3. Attended short term course on Modeling using computational fluid dynamics and MATLAB organized by Department of Chemical Engineering, NIT Raipur.
4. Attended short term course on Elements of Research & hands-on session on selection of research area, reading & writing of research paper organized by Department of Chemical Engineering, NIT Raipur.
5. Attended short term course on Simulation of flow processes using computational fluid dynamics organized by Department of Chemical Engineering, NIT Raipur.
6. Attended short term course on CFD and heat transfer with its applications organized by Department of Mechanical Engineering, NIT Hamirpur.