

Jaysree Patra

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Qualification	Name of The Institute	Percentage / CGPA	Year of Completion
PhD (Chemical Engg)	Indian Institute of Science, Bangalore	6.5/8	2020
MS (Chemical Engg)	Indian Institute of Science, Bangalore	5.9/8	2007
BE (Chemical Engg)	Utkal University, Odisha	81%	2003
12 th (Science)	Jawahar Navodaya Vidyalaya, Salbani	63%	1998
10 th	Jawahar Navodaya Vidyalaya, Salbani	79%	1996

PROJECTS DONE :

- ❖ Fabrication of functional microparticles of tunable modulus using microfluidics
- ❖ UV & thermal curable polymer microsphere, microcapsule, janus particles, fluorescent microbeads, magnetic microparticles
- ❖ Fabrication of 2D shape microparticles using continuous flow lithography
- ❖ Study of dynamics of viscous droplets
- ❖ Mechano chemical characterization and modeling of viscoelastic microparticles
- ❖ Rheology of soft and hard particle suspensions
- ❖ Sheer thickening fluid and their applications
- ❖ Design and fabrication of PDMS and glass based microfluidics device
- ❖ Design and development of continuous flow micro heater and customized continuous flow lithography apparatus
- ❖ CFD simulation of single and multiphase flow in annular centrifugal extractors
- ❖ Design and development of annular centrifugal extractor for nuclear fuel reprocessing
- ❖ Characterization of suitable solvent for extraction of nuclear fuel from phosphoric acid plants
- ❖ Experimental study of kinematics and statistics of dense granular flow

COURSE WORK :

- ❖ Fluid Dynamics and Boundary Layer Theory
- ❖ Heat Transfer
- ❖ Chemical Reaction Engineering
- ❖ Advance Engineering Mathematics
- ❖ Process Instrumentation and Control
- ❖ Transport Phenomena
- ❖ Linear Algebra
- ❖ Computational Methods
- ❖ Computational Fluid Dynamics
- ❖ Modelling in Chemical Engineering
- ❖ Advanced Heat and Mass Transfer
- ❖ Chemical Engineering Thermodynamics
- ❖ Nuclear Fuel Reprocessing and Reactor Engineering
- ❖ Mass transfer

TECHNICAL SKILLS :

Micro Fabrication Skills

- ❖ Microfabrication - Clean room technologies (Lithography, wet bench, wafer bonding, Spin coater, Mask Aligner, laser based mask writer and laser cutting tools), CNC machining and laser cutting.
- ❖ Development of Glass based capillary microfluidic devices (Shutter instruments micropipette puller, Microforge, Glass blowing, microtranslation stage).
- ❖ Synthesis soft microspheres and capsules.

Material Characterization

- ❖ Microparticle Characterization Techniques (micro indentation, micro UTM, Scanning electron microscopy and DLS particle size analyzer), Atomic Force Microscopy and Surface Profilometer.

Chemical Characterization

- ❖ Fourier-transform infrared spectroscopy (FTIR)
- ❖ UV Spectroscopy

Rheological Skills

- ❖ AntonPaar MCR301 Rheometer, Rheology, Rheomicroscopy, Dynamic Mechanical Analysis (DMA).
- ❖ Magneto Rheology.

Optical Characterization

- ❖ Bright field microscopy, stereo microscopy and confocal microscopy

Software Skills

- ❖ MatLab, Mathematica, OS (Linux, Windows), Windows (Office, Excel, Powerpoint), CFTools, Data editing tools
- ❖ Image processing tools (Matlab, ImageJ, Irfanview)
- ❖ Particle tracking Algorithm (Matlab, C)
- ❖ CLEWIN (micro channel design)

CFD Skills

- ❖ Ansys Fluent, Gambit, OpenFoam, Paraview, Autocad

EMPLOYMENT HISTORY :

Organization	Job Title	Duration
Indian Institute of Science, Bangalore	PhD scholar	Jul 2012 – 2020 (career break 2 years)
Indira Gandhi Center for Atomic Research (IGCAR), India	Scientist-C	Jan 2007 – Dec 2011
Indian Institute of Science, Bangalore	Research Student	July 2004 – January 2007
Institute of Mineral and Material Technology, Bhubaneswar	Junior Research Fellow	Jan 2004 – Jul 2004

PUBLICATIONS :**Journals:**

- ❖ K. S. Anand, Jaysree Patra and P. R. Nott; “Experimental evidence of kinematic Cosserat effect in dense granular flows”, Physics of Fluids, Vol 21, 051703(2009).
- ❖ Patra Jaysree, J.B. Joshi and N.K. Pandey, “Hydrodynamic Study of Flow in Rotor Region of Annular Centrifugal Contactors Using CFD Simulation”, Chemical Engineering Communications, Vol.200, Iss.4, 2013.
- ❖ J.B. Joshi, T. Tamhane, Jaysree Patra, M. Balamurugan, N.K. Pandey, Shekhar Kumar, U. Kamachi Mudali, R. Natarajan and R. Patil, “Design of Liquid- Liquid Settlers: Capacity and Solvent Characterization Using Dimensionless Dispersion Number”, Industrial And Engineering Chemistry Research , Volume 56, 2017.
- ❖ Jaysree Patra and P.R. Nott, “Microfluidic based synthesis of monodispersed micro particles of tunable modulus”, (communicating).
- ❖ Jaysree Patra and P.R. Nott, “Microfluidic based synthesis of core shell, janus, hemispherical particles using droplet”, (communicating).
- ❖ Jaysree Patra and P.R. Nott, “Study of dynamics of viscous droplets in dripping regime in microfluidic device”, (communicating).
- ❖ Jaysree Patra and P.R. Nott, “Discontinuous shear thickening in dense suspension of hard”, (communicating).

Conference Proceedings:

- ❖ Patra Jaysree and Koganti S.B., “Computation Fluid Dynamics Modeling and Simulation of flow in Annular Centrifugal Contactor”, presented in National conference (CHEMENT, June 2009).
- ❖ Patra Jaysree, Koganti S.B. and Saravan Muthu; “Solvent characterization using dimensionless dispersion number and its applicability for scale up of stage wise liquid-liquid extractors”, presented in 4th Asian Particle Technology Symposium, New Delhi, 2009.
- ❖ Patra Jaysree; “Experimental study of kinematics and statistics of dense granular flow”, presented in 4th Asian Particle Technology Symposium, New Delhi, 2009.
- ❖ Pandey N.K, Jaysree Patra, V. Reshmi and C. Mallika, “Process Model Development for Fast Reactor Fuel Reprocessing”, presented in Asian Nuclear Conference (NUCAR, 2010).
- ❖ Patra Jaysree, Pandey N.K, U. Kamachi Muduli and R. Natarajan, “Characterization of Two Phase Flow Instability in the Mixing Zone of Annular Centrifugal Contactor”, International Solvent Extraction Conference, 2011.

DECLARATION :

I hereby declare that the information mentioned above are true and correct to the best of my knowledge and belief.

(Jaysree Patra)