BISHWA RANJAN SI

Business Process Engineer | Sterlite Technologies | IIT Kanpur

E-mail: sibishwaranjan@gmail.com
rbishwa.github.io; **LinkedIn:** Bishwa

Education

2019 **M.Tech**, *Indian Institute of Technology Kanpur*
Major: Chemical Engineering, *CGPA: 9.0/10*

2018 **B.Tech**, *Indian Institute of Technology Kanpur*
Major: Chemical Engineering, *CGPA: 7.8/10*

Work Experience

Jul '19-Present **Business Process Engineer**
Sterlite Technologies, Process Transformation
- Identified key problem areas in the existing optical fiber batch manufacturing process for the realisation of a continuous process.
- Prepared white papers and CAD models in Solid-works explaining possible solutions
- Created a Vendor Ecosystem through engagement with key vendors with expertise in solving the problems areas.

Research Experience

May '18-Jun '19 **Active Colloids in Shear Flow**
Indian Institute of Technology Kanpur, Prof. Rahul Mangal
- Synthesized Janus Particles(JPs) using the process of sputtering from a Pt target onto a silica micro-particles(approx. 5 um) monolayer on a glass slide.
- Studied the active motion of JPs by dispersing them at different wt% solution of H2O2
- Used a particle tracker in MATLAB to get their trajectory and computed the diffusivity and speed of the JPs at different wt%
- Introduced additional shear in the system and analysed the behaviour of the JPs at different flow conditions with variation in wt% of H2O2 in the solution

Aug '17–Nov '17 **Analysis of powder formation in a CVD reactor**
Indian Institute of Technology Kanpur, Prof. Naveen Tiwari
- Preventing Si powder formation, obtain uniform film of Si on float glass in an *APCVD* reactor
- Modelled the thickness of film on glass at different temperatures and pressures in *MATLAB*
- Analyzed the process in *COMSOL Multiphysics* for possible powder formation at different locations in the reactor

Jan '17–Apr '17 **Nano-photo catalysis for waste-water purification**
Indian Institute of Technology Kanpur, Prof. Raju Gupta
- Prepared coating of polydopamine on TiO2 nanofibers
- Carried out SEM, TEM, FTIR testing methods for the characterization of polydopamine coatings on nanofibers
- Used softwares like ImageJ and Origin to deduce the results obtained from SEM and FTIR
- Further pyrolysis of nanofibers was done in H2 and Argon atmosphere to convert polydopamine intographene/reduced-graphene oxide
- Analysis of heated fibers by Raman spectroscopy and FTIR showed Id/Ig ratio less than one indicatingpresence of graphene and reduced graphene oxide
- Graphene/reduced-graphene oxide coated TiO2 nanofibers are a better substitute to conventional TiO2 nanofibers for waste water remediation

Major Course Projects

Jul–Nov '17 **Plantwide Design of Acrylic Acid Production using Propene**
Course Project for Chemical Engineering Design (CHE453), Prof. Nitin Kaistha
- Designed a chemical plant producing Acrylic Acid(AA) with purity of 99.5%
- Identified feasible process flowsheets and performed Cost Optimisations and Heat integration
- Minimized duties and increased the profit by optimising dominant design Degrees of Freedom
- Designed a plant-wide control strategy for AA production plant for 20% throughput fluctuations

May '17 **Azeotrophic separation of ethanol and water**

Project for Industrial Summer Training , Ipca Laboratories Limited, Ratlam

- Studied the distillation columns in the plant and recorded production data over a period
- Simulated the process of purifying ethanol using cyclohexane as entrainer in ASPEN PLUS and optimized the process and design parameter

Other Projects

May–Dec '16 **Heat Exchanger Design**

SimuTech Group, Indian Institute of Technology Kanpur

- Designed 3D CAD model of a shell and tube heat exchanger in Autodesk Inventor
- Analysed the material cost for the prototype and calculated the efficiency and other parameters by Kernś method
- Used Ansys Fluent to run simulations of the model and computed the temperature drop and the process parameters

Aug–Nov '15 **Multichopper**

Course project for course Manufacturing Processes-II (TA202), Prof. Arvind Kumar

- Designed and manufactured a hand driven mechanical grass chopping machine that can be used in rural areas during harvesting period using operations like welding, turning, milling and drilling.

May–Jun'15 **T-shirt Recognition**

Programming Club, Indian Institute of technology Kanpur

- Web Scraping using Beautiful Soup of various T-shits images and sizes available online
- Used SSIM technique and Bhattacharya algorithm to compute similarity index between images
- Developed an application in Visual Studio which would conduct image search and find the best possible T-shirt

Teaching Assistanship

Jan'19 - Apr'19 **Polymer Physics**, *Indian Institute of Technology Kanpur*
Instructor: *Prof. Rahul Mangal*

Aug'18 - Nov'18 **Chemical Engg. Communication**, *Indian Institute of Technology Kanpur*
Instructor: *Prof. Siddhartha Panda*

Academic Achievements

- Secured **AIR-2167** (among 150,000 students) in JEE Advanced 2014
- Outscored 1.3 million students appeared in JEE Main 2014 with a percentile of **99.55**
- Secured All India **97.69** percentile in Class XII Board Examination

Technical skills

Tools and Techniques: Colloidal monolayer preparation, Prepation of Janus particles, Thin film coating on nanofibers, Optical Microscope handling

Software: Aspen Hysys, Aspen Plus, COMSOL, Autodesk Inventor, SolidWorks, Ansys Fluent, Polymath, Origin, ImageJ

Languages: MATLAB, Python, C++, C, Fortran, HTML, CSS, LaTeX

Relevant Coursework

Chemical Engineering: Process Control, Heat Transfer, Mass Transfer,Thermodynamics, Chemical Process Design, Fluid Mechanics, Chemical Reaction Engineering, Chemical Process Industries, Transport Phenomena

Inter-disciplinary: Polymer Physics, Inter-molecular and Surface forces, Colloids and Interfacial forces, Microelectronic Fabrication, Computational Fluid Dynamics, Introduction to BioTechnology, Biochemical Engineering, Hydrodynamic Instability

Mathematics: Mathematical Methods in Chemical Engineering, Numerical Methods in Engineering, Linear Algebra and Differential Equations

Positions of Responsibility

May '16–Apr '17 **Coordinator**, *SimuTech Group*, IIT Kanpur

- Jointly led a group of 30 students from different years of study in Department of Chemical Engg. forsemester long projects
- Organized a 3-days-long MATLAB workshop for Chemical Engineering students
- Received **Skylark Award** for best initiatives in the Department in the years 2016 and 2017
- Monitored social media engagements and brand presence across Facebook for Simutech Group

Aug '15–July '16 **Academic Mentor**, *Counseling Service*, IIT Kanpur

- Provided personal tutoring to academically weak students for the Introductory Biology course
- Prepared practice questionnaire for the students for the semester exams

Miscellaneous

Aug'14 Served as a NCC Cadet for a year and participated in SLR shooting workshop

Jan'16 Worked in the Hospitality Team for the technical fest of IIT Kanpur, Techkriti'16

Apr'15 Worked in Synchronicity (Western band competition) in Antaragni'15