

**Name:** Saurabh Umrao

**Programme:** Ph.D. in Chemical Engineering (2014-19)

**Ph.D. Synopsis:** The first part of my research work has been focused on developing DNA technologies to build highly sensitive biosensors with a high multiplexing capability. We have built cost-effective point of care diagnostic device that will enable population-wide screening. It will help in significant cost-saving in healthcare systems, in addition to the general (and longer term) benefits of a lower mortality associated with the certain disease. In the second part of my work, I am trying to understand the assembly of three-dimensional DNA origami structures on to the supported lipid bilayer platform using molecular crowding. The study provides a route to produce spatially controlled arrays of nanodevices in micrometer space which has applications in areas as diverse as nanolithography, sensing, and biomedical engineering.

**Skills:**

- Computer Language: C/MATLAB/Python.
- Engineering Software: Aspen Plus, AutoCAD, CadNano, Latex.
- Simulation Skills: COMSOL, CanDo.
- Experimental Skills: Single molecule technique, Super-resolution microscopy, DNA nanotechnology, Ellipsometry, Scanning Electron Microscopy, Atomic Force Microscopy.
- Technical Skills: Scale-up, Process identification, Economic analysis, Process Feasibility, HAZOP, and PSSR study, Process improvement, SAP basics.
- Management Skills: Project management, Technology transfer.
- Other Skills: Oral and written communication, Team-work, Critical and strategic thinking.

**Courses:** Statistics, Numerical Methods, Reaction Engineering, Thermodynamics, Fluid Mechanics, Computational Transport Phenomena, Advance Process Control.

**Work experience:** Dr. Reddy's Laboratories Ltd, India (2012-14).

**Expected date of graduation:** March, 2019.