Laxmicharan Samineni

Curriculum Vitae

EDUCATION

- **University of Texas at Austin, Austin** August 2019 - Ongoing
  Ph.D Candidate, Chemical Engineering
- **Pennsylvania State University, University Park** August 2017 - August 2019
  Ph.D Candidate, Chemical Engineering
  - Cumulative Performance Index : **4.0/4.0**
- **Indian Institute of Technology, Kanpur** July 2013 - July 2015
  M.Tech, Chemical Engineering
  - Cumulative Performance Index : **9.67/10**
- **National Institute of technology, Warangal** July 2007 - April 2011
  B.Tech, Chemical Engineering
  - Cumulative Grade Point Average : **7.82/10**

ACADEMIC EXPERIENCE

- **Pathogen removal using protein enhanced point of use filters**
  University of Texas at Austin, Austin
  Prof.Manish Kumar, Prof.Thomas Truskett *Ausgust, 2019 - Ongoing*
  - Currently working on purifying the individual proteins from *Moringa oleifera* seed water extract to develop a fundamenatal understanding of the interaction between these proteins and virus particles
- **Pathogen removal using *Moringa oleifera* coated sand filters**
  Pennsylvania State University, University Park
  Prof.Manish Kumar, Prof.Stephanie Velegol, Prof.Darrell Velegol *December,2017 - August, 2019*
  - Established the virus removal capability of a plant antimicrobial peptide based sand filters using MS2 bacteriophage as a surrogate
  - Microscopy based assay to quantify the sticking coefficient of colloidal particles to the protein ammended surface
- **Hydrodynamic stability theory** **Indian Institute of Technology, Kanpur**
  Prof. V. Shankar *July,2013 - July-2015*
  - Gained working knowledge of hydrodynamic stability, linear stability analysis and application of spectral collocation methods to solve stability problems.
  - Performed linear stability analysis for 3-D perturbations in Plane Poiseuille flow and Plane Couette flow and applied Chebyshev collocation method to obtain corresponding eigenvalue spectrums
  - Developed a linear stability probem for 2-D perturbations for Plane Couette flow past a flexible surface by modelling felxible surface as a linear visco-elastic solid
  - Applied spectral collocation methods to gain insights into the underlying physics of inviscid modes in Plane Couette flow past a flexible surface
- **Teaching assistantship**
  - Teaching assistant for undergraduate course on *Fluid Mechanics* at Pennsylvania State University
    Spring 2019
  - Teaching assistant for undergraduate course on *Biomolecular engineering* at Pennsylvania State University
    Fall 2018
  - Teaching assistant for undergraduate computational lab on *Process Dynamics and Control* at IIT Kanpur
    Spring 2014
  - Teaching Assistant for an undergraduate course on *Process Dynamics and Control* at IIT Kanpur
    Spring 2015

RELEVANT COURSE-WORK

- **Graduate courses** : *Transport phenomena**, *Chemical reaction kinetics**, *Statistical thermodynamics**, *Introduction to Hydrodynamic stability, Numerical fluid flow and heat transfer, Thermodynamics, Fundamentals of Colloid and Interface science and technology, Mathematical methods in chemical engineering*
  * - *Courses completed at The Pennsylvania State University*

- **Undergraduate courses** : *Engineering mathematics (I,II, III,IV), Principles of stoichiometry, Fluid and particle mechanics, Chemical engineering thermodynamics (I,II), Chemical reaction engineering (I,II), Process dynamics and control, Heat transfer, Mass transfer (I,II), Elements of transport phenomena, Biochemical engineering, Plant design and process economics, Polymer technology, Membrane technology*

INDUSTRIAL EXPERIENCE

- **Crystallization process development for Active Pharmaceutical Ingredients (API)**
  Dr. Reddy's Laboratories, *Polymorphism and Particle Engineering Lab* *July 2015 - July 2017*
  - **Spray drying process development to yield amorphous product**
    - Successfully developed spray drying processes to yield amorphous material of desired quality for four different APIs
    - Selected suitable solvent media for dissolution of drug substance to suppress impurity formation and meet regulatory specifications
    - Performed experimental studies applying statistical design of experiments to identify optimal process paramters, maximize yield and purity of the product. Also, successfully translated these processes to plant scale
  - **Solvent mediated crystallization process development**
    - Developed a solvent mediated crystallization process for producing a novel metastable polymorph employing methodical hypothesis driven experimentation
    - Selected a suitable statistical design of experiments (i-optimal design) to understand the interplay of various parameters on the final polymorph quality
    - Completed scale up and validation of the crystallization process at plant scale to file a Drug Master File

- **Crystallization process development for Active Pharmaceutical Ingredients (API)**
  Dr. Reddy's Laboratories, *Polymorphism and Particle Engineering Lab* *July 2011 - July 2013*
  - Acquired rudimentary knowledge of crystallization, polymorphism and built capabilities in statistical design of experiments, process analytical tools and various off-line analytical techniques
  - Successfully demonstrated the advantages of applying solubility modelling software (DynoChem) to screen for optimal solvent mixtures during development phase of API
  - Applied solubility modelling to choose apt solvent system to overcome filtration issues and this resulted in significant cost reduction during downstream processing. This novel crystallization process for isolating the specific polymorph was published as part of a process patent.

PUBLICATIONS

- Song, W., Tu, Y., Oh, H., **Samineni, L.,** Kumar, M. Hierarchical optimization of high performance biomimetic and bioinspired membranes, Langmuir

- **Samineni. L.,** Xiong. B., Pei. A., Khuester. L., Wang. H., Dickey. R., Soto. E.P., Velegol. D., Kumar. M., Velegol. S. 7- log virus removal in a simple functionalised sand filter (under peer review)

- WIPO Patent number, WO/2013/008250 A3 : CRYSTALLINE FORM OF RETIGABINE AND PROCESSES FOR MIXTURE OF RETIGABINE CRYSTALLINE MODIFICATIONS

CONFERENCE PRESENTATIONS

- **Samineni, L.,** Xiong, B., Pei, A., Wang, H., Kumar, M., Velegol, D., Velegol, S. *Moringa olefiera* seed sand filter for wastewater treatment. 2018 Environmental Chemistry and Microbiology Student Symposium, University Park, PA, USA, Apr. 2018 (Oral presentation)

- **Samineni, L.,** Xiong, B., Kumar, M., Velegol, D., Velegol, S. Measurement of nanoparticle sticking coefficients for Moringa-coated sand filters. 2018 ACS Colloid and Surface Science Symposium, University Park, PA, USA, Jun. 2018 (Oral presentation)

- **Samineni, L.,** Xiong, B., Kumar, M., Velegol, D., Velegol, S. Enhanced virus removal in a practical sand filter 2019 ACS Chemistry and Water national meeting, San Diego, CA, USA, Aug. 2019 (Oral presentation)

SKILLS

- **Computational packages**: DynoChem, Design Xpert, Minitab, ASPEN PLUS
- **Analytical Techniques**: Powder X-Ray Diffraction, Focused Beam Reflectance Measurement, Differential Scanning Calorimetry, Thermogravimetric Analysis, Karl-Fischer Titration, Gas Chromatography, High Performance Liquid Chromagraphy, SDS- PAGE gel electrophoresis, Dynamic light scattering
- **Progrmming languages** : C, C++, LaTeX, Mathematica

AWARDS AND HONORS

- Third prize in PPG Millennium Cafe Elevator pitch competition 2019
- Recieved Oustanding candidacy exam award at Pennsylvania State University, Chemical engineering 2018
- Recieved Academic excellence award from Department of Chemical engineering, IIT Kanpur for outstanding academic performance 2015