Kaushik N. Shankar

Contact Information

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Education

University of Pennsylvania, Philadelphia, PA

PhD Candidate, Chemical and Biomolecular Engineering *(Expected 2023)*
Advisors: Dr. Scott L. Diamond and Dr. Talid R. Sinno

Master of Science in Engineering, Chemical and Biomolecular Engineering, GPA: 4/4 *(2021)*

Indian Institute of Technology (IIT) Bombay, Mumbai, India

Bachelor of Technology with Honors, Chemical Engineering, GPA: 8.86/10 *(2018)*

Research Experience

Doctoral Research, University of Pennsylvania, Philadelphia, PA *(2018-Present)*
Developing a robust and efficiently parallelizable multiscale model for thrombus formation in patient-specific vasculatures. The model accounts for changes in blood flow as the platelet deposit grows in size, the motion and bonding of platelets under flow, and the release and transport of soluble platelet agonists.

Undergraduate Research Award, IIT Bombay, Mumbai, India *(2016-18)*
Employed a computer-aided approach for the selection and design of organic solvents for the extraction of ephedrine from its aqueous solution. Utilized structural constraints and identified solvent performance indicators to design solvents superior to the reference solvent – toluene.

Supervised Learning Project, IIT Bombay, Mumbai, India *(2017)*
Devised a mathematical framework built upon supplementation studies and material balances in the body to model the whole-body metabolism of Calcium and Vitamin D in children.

Research Intern, University of Michigan, Ann Arbor, MI *(2017)*
Developed a compartmental pharmacokinetic model for the human body to characterize the adsorption, distribution and elimination of venom neurotoxin subsequent to cobra envenomation.

Honors and Awards

Finalist, Prize for Excellence in Teaching, University of Pennsylvania *(2020)*
Pass with Distinction, PhD Qualifying Examination, University of Pennsylvania *(2019)*
Citation, Department of Chemical Engineering, IIT Bombay *(2018)*
Undergraduate Research Award, IIT Bombay *(2016)*
Scholarship for Higher Education, Government of India *(2014)*
KVPY Fellowship – Young Scientist Incentive Scheme, Government of India *(2013)*

Publications

Shankar, K.N., Zhang, Y., Sinno, T., & Diamond, S.L (2021). A three-dimensional multiscale model for the prediction of thrombus growth under flow with single-platelet resolution. Under review at PLoS Computational Biology.

Zhang, Y., Trigani, K.T., **Shankar, K.N.**, Crossen, J., Sinno, T., & Diamond, S.L (2021). Anti-GPVI Fab reveals distinct roles for GPVI signaling in the first platelet layer and subsequent layers during microfluidic clotting on collagen with and without tissue factor. Under review at Thrombosis Research.

Gutiérrez, N.G., **Shankar, K.N.**, Sinno, T., & Diamond, S.L. (2021). Thrombosis and hemodynamics: external and intrathrombus gradients. Current Opinion in Biomedical Engineering, 100316.

Shankar, K.N., Adhikari, J., & Noronha, S.B. (2019). Computer-aided solvent selection and de-

sign for the efficient extraction of a pharmaceutical molecule. The Canadian Journal of Chemical Engineering, 97, 1605-1618.

Talks

Annual Philadelphia Workshop on Hemostasis, Thrombosis, and Atherosclerosis *(2021)*
Biomedical Engineering Society Annual Meeting *(2021)*
American Institute of Chemical Engineers Annual Meeting *(2020)*
NIH NHLBI Systems Biology Meeting *(2020, 2021)*
Penn Institute for Computational Science Student Seminar Series *(2020)*
SIAM Conference on the Life Sciences *(2020)*
Platelet Club Seminar, University of Pennsylvania *(2020)*

Poster Presentations

International Society on Thrombosis and Haemostasis Annual Congress *(2021)*
Chemical Engineering Graduate Student Symposium, University of Pennsylvania *(2020, 2021)*

Teaching Experience

High School Outreach Program, University of Pennsylvania *(2021)*
Engaged with high school students (of whom more than 75% are minorities) to demonstrate the value of STEM careers. Taught students the fundamentals and significance of data analysis, and introductory scripting in Python. Developed a hands-on project to illustrate the use of computer simulations to model the impact of public policy on the spread of COVID-19 cases.

Graduate Teaching Assistant and Grader, University of Pennsylvania
ENM 502, Numerical Methods and Modeling *(2020)*
Instructor: Talid Sinno
CBE 640, Transport Processes (Student Testimonial) *(2019)*
Instructor: Talid Sinno

Undergraduate Teaching Assistant, Indian Institute of Technology Bombay
CS 213x, Data Structures and Algorithms *(2016)*
Instructors: Ajit A. Diwan and Deepak B. Phatak
CS 101x, Computer Programming and Utilization *(2015)*
Instructors: Supratik Chakraborty and Deepak B. Phatak

Teaching & Mentorship Training

Course in College Teaching, Center for Teaching & Learning, University of Pennsylvania *(2020)*
Eight-week course designed to help graduate students and postdocs prepare to teach their first college course. Discussed teaching with a group of instructors as a way of exploring what works in the classroom, what makes teaching effective, considering both individual teaching style and disciplinary differences in teaching. Compiled a syllabus, sample assignments, and teaching philosophy.

Peer Mentor Training, Tata Institute of Social Sciences *(2017)*
Two-day workshop that focused on skills to facilitate the process of helping and supporting a mentee in distress. Learned verbal and non-verbal skills, and discussed interventions for different issues faced by students.

Positions of Leadership

Coordinator, Academic Mentorship Program, Chemical Engineering, IIT Bombay *(2017-18)*
Conducted interviews to select a team of 23 student mentors from a pool of 120 applicants. Facilitated healthy interaction of mentors with student counselors in the institute. Coordinated with faculty in restructuring curriculum, and organizing information sessions. Mentored students regarding academics, co-curricular activities and emotional balance.
List of students mentored and their current positions

Competitions Manager, AZeotropy, Chemical Engineering Symposium, IIT Bombay *(2016-17)*
Conceptualized, ideated and implemented the competitions for the symposium. Devised an un-

conventional quizzing format for the national level quiz, Chem-O-Philia, garnering participation of 1000+ students.

Professional Associations	American Heart Association Biomedical Engineering Society American Society of Hematology International Society on Thrombosis & Haemostasis