Michigan State University
Science at the Edge
Engineering Seminar

February 28th, 2014
11:30 a.m.
Room1400 Biomedical and Physical Sciences Building
Refreshments served at 11:15 a.m.

Vikas Nanda
Department of Biochemistry and Molecular Biology
Rutgers University

Pushing on a string - the design of protein fibers

Abstract

Advances in the field of computational protein structure modeling has allowed the field to design synthetic proteins with enhanced properties and new functions. However, the engineering of protein fibers such as collagen has proved challenging, given our limited understanding of how these proteins fold and the molecular forces that hold them together. Collagen assembles in a hierarchic fashion from nanometer scale molecules to micron and millimeter scale fibers and gels. We have designed a series of synthetic collagen-like fibers whose properties are providing insights into the mechanisms by which natural collagens fold and assemble. Designer fibers are already leading to applications as self-assembling biomaterials and bio/nano devices.

Bio

Dr. Nanda earned his Bachelor of Science degree in biology at Caltech, and his doctorate in biochemistry at Johns Hopkins University. As a postdoctoral researcher at the University of Pennsylvania, he developed computational tools for protein design and structure prediction. In 2006 he joined the biochemistry faculty of the Robert Wood Johnson Medical School at Rutgers University. His current research includes developing synthetic protein mimics of the extracellular matrix, understanding the molecular basis of food protein allergy, and developing novel peptide therapeutics for cancer, diabetes and flu using non-natural amino acids.

For further information please contact Prof. Christina Chan, Department of Chemical Engineering and Materials Science at krischan@egr.msu.edu