



SEMINARS IN CHEMICAL AND BIOMOLECULAR ENGINEERING



Wednesday, May 29, 2019

10:00am - 11:00am

Botany 325

Chaitanya Ullal

Assistant Professor

Materials Science and Engineering

Rensselaer Polytechnic Institute

"Beyond the Diffraction Limit: Imaging and Writing 3D Polymer Nanostructures with Visible Light"

Recent developments in far-field microscopy have enabled imaging at nanoscale resolutions using visible light. The circumvention of the diffraction limit opens the benefits of optical microscopy to polymer systems at the relevant nanometer length scales. These benefits include the ability to non-destructively provide local, dynamic and three-dimensional structural information. Specific examples related to colloidal crystals and block copolymers that would be challenging to image with contemporary techniques are used to highlight the potential of sub-diffraction far-field fluorescence microscopy for the polymer and nanosciences. Ongoing work on imaging of nanoscale variations in crosslink density of colloidal gels and the application of super-resolution optics to lithography will also be presented.

Chaitanya Ullal is an Assistant Professor in the Department of Materials Science and Engineering at the Rensselaer Polytechnic Institute. He got his Ph.D. in Materials Science and Engineering at MIT and did a post-doc in the lab of Stefan Hell, at the MPI-BPC in Germany. He is a recipient of the NSF CAREER Award and the ACS PRF New Investigator Award. His research interests are related to unconventional nanofabrication, optics and polymers. A current emphasis of the group is the use of optical microscopy with nanoscale resolution to image and pattern nanostructured polymers.