Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Nanoscale imaging of nonequilibrium polymer films JOHN KING, STEVE GRANICK, University of Illinois, Urbana-Champaign — In recent years there have been exciting advances in sub-diffraction limited imaging based on fluorescence microscopy. While most applications of super-resolution microscopy focus on static biological imaging, we are interested in extending these techniques to the study of polymer dynamics. To this end, we couple stimulated emission depletion (STED) with spectroscopic detection, relying on spectral features of fluorescence emission to serve as the imaging contrast agent. We aim to adapt fluorescent dyes responsive to environmental properties (polarity, mobility, current, temperature, ect.) to STED imaging. Using the fluorescent spectral response as a contrast agent allows for nanoscopic environments to be directly imaged without the need for specific labeling. Rapid acquisition of images allows for slow dynamic processes in nonequilibrium polymer films to be imaged in real time. We demonstrate the power of super-resolution spectroscopic imaging by directly imaging several topical problems in materials science.

John King
University of Illinois, Urbana-Champaign

Date submitted: 13 Nov 2014 Electronic form version 1.4