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# Towards Material Imaging at Space-Time Limit

Thursday, October 8

4:00pm

Brace 211

Refreshments:

3:30pm, Brace 201

The characterization of nanostructures and their properties has risen as a critical scientific endeavor of the 21st century. Progress in sharpening our vision into the transformative nature of materials and macromolecules on the lengthscale of 1-100 nm and timescale of fs-ps will provide new insight into how materials behave on the most fundamental level. I will report the recent development of ultrafast material imaging techniques using short optical, X-ray and electron pulses, and especially focus on the latter. Specifically, I will present a methodology based on ultrafast electron diffraction, specialized to investigate randomly dispersed nanomaterials and ultrathin interfaces with sensitivity reaching 1nm and 1% sample occupancy ratio. I will show snapshots of molecular processes videographed with this method, and discuss prospects of further improving the technique to reach imaging at the single particle level.