

Seminar

Next generation optoelectronic materials and new physics at the nanoscale

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We are currently in the golden age of material physics, where discovery of new physical phenomena and materials are driven by each other. In this age, a combination of optical and electron spectroscopy is needed to drive scientific progress. First, I will demonstrate how ultrafast optical spectroscopy can measure fundamental dynamics in a new class of materials, transition metal dichalcogenide monolayers. We measure picosecond relaxation dynamics, transport relevant mobility edge, long-lived spin-valley indices (for quantum computation), and fine structure for quantum quasiparticles. I will then discuss atomic scale characterization and electron beam induced luminescence on InGaN/GaN LEDs. Remarkably, we measure a time dependent luminescence signal on the order of seconds. These dynamics are related to carrier transport and long lived defect states, offering a way to characterize these complex LED heterostructures.

Thursday, Nov 22nd 2018

11:30 AM (Tea/Coffee at 11:00 AM)

Seminar Hall, TIFR-H