**Low Energy Spectroscopies with Synchrotron Radiation:**
**From Micro to Nano and Opportunities for Time-Resolved Methods***

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The qualities of synchrotron radiation (high brightness, broad spectral range and pulsed) are well-suited for the combination of time-resolved and microscopic spectroscopies. This is particularly valuable for the infrared spectral range where the photon energy directly matches that of excitations in quantum materials. The available time resolution of the synchrotron probe beam - in the picosecond rather than femtosecond range - is offset by the extremely wide spectral range that provides true spectroscopy. This is now being extended to include apertureless scattering type near-field spectroscopy where the spatial resolution approaches 10 nanometers and vastly exceeds the nominal far-field limit of about $2\lambda$, i.e. many microns.

This presentation will review recent advances in both infrared nanospectroscopy at ALS and NSLS-II, and some time-resolved studies from NSLS. Plans for developing near-field infrared nanospectroscopy of materials at low temperatures and a synchronized laser system for pump-probe spectroscopies at NSLS-II will also be described.

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