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Ultrafast dynamical processes in low dimensional materials IOANNIS CHATZAKIS, Physics and Astronomy Texas Tech University — Low-dimensional (e.g. atomically thin) materials continue to gain prominence in applications ranging from electronics to photonics and alternative energy generation systems. Critical to efficiently developing these systems is the understanding of the fundamental processes related to the dynamics of charge carriers, phonons, and other excitations (i.e. excitons, polaritons). In this talk, I will focus on electron-phonon interactions in carbonic materials through which electrons lose their energy and become thermally equilibrated, and the phonon-phonon scattering processes responsible for energy release into the environment as heat. I will also discuss a representative example of the recombination mechanism of the photo-generated charge carriers in a two-dimensional sheet of hexagonal boron nitride..

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