



e-conversion



Sonderseminar

**Montag, 25. April 2022
16:30 Uhr**

WSI, Seminarraum S 101

also ONLINE via ZOOM

<https://tum-conf.zoom.us/j/63210679333>

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“Inelastic light scattering from disordered crystals”

My group has investigated the structural dynamics of halide, oxide, and sulfide perovskites crystals using Raman scattering in the past several years.

The perovskite crystal's structural dynamics are fascinating because they exhibit a plethora of anharmonic effects such as soft modes, order-disorder phase transitions, and local fluctuations. Such effects have significant implications on the electronic properties (e.g. dielectric response, carrier lifetimes, and carrier mobilities) of the crystals. Importantly they may lead to the relaxation of the symmetry-based selection rules for Raman scattering. On the one hand, the resulting Raman spectra are difficult to interpret. On the other, they are rich in information regarding crystal properties.

In this talk, I will review our journey to unlock the mysteries of perovskite structural dynamics using Raman spectra.

First, I will demonstrate and discuss a common discrepancy between x-ray diffraction data showing perfect single crystals and Raman data showing disorder. Next, I will explain how we use generalized scattering models to settle this discrepancy. Finally, I will show that the intensity of the scattered light, an underused experimental observable, can be utilized to learn much regarding crystal properties such as dielectric response.

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