Soft semiconductors are solid substances with a band gap in the range of 0.8-3 eV that are also mechanically soft compared to standard semiconductors like silicon. Such solids often exhibit anharmonic structural fluctuations that can strongly affect, and even dominate, their electronic properties.

In the talk, I will briefly discuss my experimental approach and present a recent study where we follow the temperature dependence of the emission Stokes shift (energy difference between the absorption and emission peaks) in halide perovskites which are a specific family of soft semiconductors. I will show that unlike conventional semiconductors, the Stokes shift increases with temperature as it would for chromophores in polar solvents. In other words, that from an electronic standpoint, these semiconductors behave like liquids. This unconventional behaviour is indicative of a temperature dependent dielectric response that originates from anharmonic lattice vibrations. To that end, this study is a striking example for the importance of understanding the effect of anharmonic fluctuations in soft semiconductors in general.