## Considering system – bath interactions in semiconductor perovskite Quantum Dots

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## Abstract

System-bath interactions are ubiquitous. Time-resolved spectroscopy has been a means to place such interactions under the microscope. We begin by

discussing three developments from our a) group on building a better microscope by moving spectroscopy from picoseconds to femtoseconds to attoseconds, only as needed. We then apply these methods to explore systembath interactions of electronic coherence in both time and space, as revealed in the novel light-emissive of metal-halide perovskite system semiconductor quantum dots. This new form of QD has a unique lattice characterized by both being strongly coupled and dynamically disordered. Remarkably, this lattice or bath, enables unique light emissive properties in the excitons or system.



- "Excitonic Quantum Coherence in Light Emission from perovskite Nanocrystals, Nano Lett, 24, 61 (2023).
- "Two-dimensional electronic spectroscopy reveals liquid-like lineshape dynamics in CsPbI 3 perovskite nanocrystals", Nat. Commun. 10, 4962 (2019).