Dynamic Spectroscopy

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Time-Resolved Spectroscopy

Our work aims at deciphering energy transfer pathways and mechanisms in molecules and molecular ensembles. The fastest and most fundamental timescale of such processes is defined by the speed of atomic motion, namely in the femtosecond (10^{-15} second) range. This renders time-resolved laser spectroscopy with femtosecond pulses the method of choice, allowing us to describe *e.g.* energy transfer pathways of photosynthetic light harvesting complexes.

Yet in chemistry, not everything is ultrafast. Reaction dynamics along a photocatalytic cycle occur on a broad range of timescales, spanning ten orders of magnitude; from hundreds of femtoseconds for internal conversion in the photocatalyst to millisecond lifetimes of charge separated species in solution. We aim at the description of entire photocatalytic reactions to identify bottlenecks in cooperation with partners from synthesis and theory.