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Ultrafast microspectroscopy - insights into artificial light harvesting and metabolic processes

**Abstract:** Nonlinear laserspectroscopy allows to achieve both high temporal and spatial resolution. In this presentation applications of time-resolved spectroscopy to study photoinduced charge-transfer reactions in supramolecular transition metal complexes are discussed. In particular, applications to artificial photosynthesis are presented. Here, the photoinitiated electron-transfer dynamics on a sub-100-fs and ps-time-scale are shown to influence the outcome of a subsequent photochemical reaction occurring on a time-scale of seconds. In the second part of the talk, multimodal nonlinear optical imaging is introduced and its application to biomedical diagnostics is presented.