

# CoffeeTalk@ISOF

## Ultrafast optical spectroscopy: advanced techniques for the study of excited state dynamics

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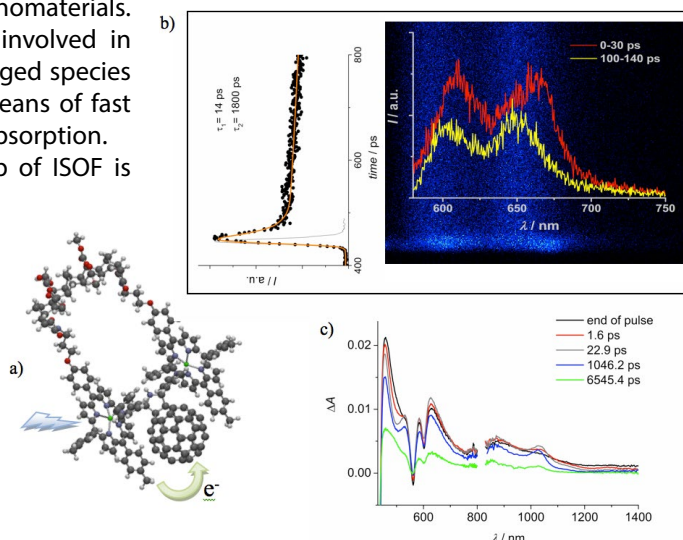
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Time-resolved optical spectroscopy techniques addressing time resolution of hundreds of femtoseconds are useful tools to investigate the excited state dynamics of molecules and nanomaterials. Transient and short lived species such as excited states involved in photoinduced energy or electron transfer processes, or charged species produced upon photoreactions, can be characterized by means of fast luminescence detection and/or pump-and-probe transient absorption.

The recently upgraded ultrafast optical spectroscopy setup of ISOF is based on a Ti:Sa femtosecond laser system combined with an optical parametric amplifier as excitation source, coupled with a streak-camera apparatus for luminescence determination and with a transient absorption spectrometer for pump-and-probe experiments, suitable for non-emitting species.

The basic principles of the two characterization techniques, as well as the configuration and the potential of the equipment will be described, with reference to a research case recently explored [1].



[1] A. Briš, P. Trošelj, D. Margetić, L. Flamigni, B. Ventura, *ChemPlusChem* submitted.

**Fig. 1.** a) bis porphyrin-fullerobispyridine complex investigated; b) streak image of porphyrinic host fluorescence; c) time evolution of the transient absorbance.

**Tuesday 17 May 2016, 14:30**  
**ISOF 12 – Meeting Room (1<sup>st</sup> floor)**  
**CNR Research Area**  
**Via Gobetti 101, Bologna**



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