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ФАКУЛТЕТЕН СЕМИНАР

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Laser Spectroscopy and Fluorescence Microscopy Applied to Study Chemical and Biological Systems

The nonlinear optical spectroscopy is a powerful tool to study elementary processes in chemistry and biology [1]. To be able to control these processes (many of which occur on femtosecond to picosecond time scale) one needs to have detailed knowledge about the specific and non-specific interactions between the studied molecule and its immediate environment. Few examples of studies on systems with possible application in materials chemistry, solar cells, biological imaging and drug delivery will be presented to demonstrate the potential of these techniques. In the field of materials chemistry the interactions of a chromophore with silica based materials are discussed from the point of view of ensemble average and single molecule studies [2,3]. The works, relevant to dye sensitized solar cells, are presented by time-resolved experiments on a porphyrin-based dye interacting with Al₂O₃, while those oriented towards biological imaging and drug delivery are represented by studies on specific and non-specific interactions in chemical and biological cavities [4].

[1] A. H. Zewail, *J. Phys. Chem. A*, **2000**, *104*, 5660.

[2] B. Cohen, F. Sanchez, A. Douhal, *J. Am. Chem. Soc.*, **2010**, *132*, 5507.

[3] B. Cohen, S. Wang, J. A. Organero, L. F. Campo, F. Sanchez, A. Douhal, *J. Phys. Chem. C*, **2010**, *114*, 6281.

[4] C. Martín, M. Gil, B. Cohen, A. Douhal, *Langmuir*, **2012**, *28*, 6746.