

## VII Leopoldo García-Colín Mexican Meeting on Mathematical and Experimental Physics



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### **LUIS MENDOZA: Ultrafast study of cyanine IR-780: efficiency of two photon absorption by control of molecule release.**

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Materials that have properties of two-photon absorption (2PA), such as cyanine dyes, have wide applications in emerging areas such as coherent laser control, optical limiting, photofarmacology or 3-dimensional imaging of biological tissue [1,2]. In this study, the efficiency of 2PA of cyanines was explored by the two-photon induced fluorescence (TPIF) technique with a femtosecond laser [3]. An Optical Parametric Amplifier (OPA) has been used to excite a sample at various wavelengths in regular intervals in the near-infrared (850-1050 nm); light-induced fluorescence has been produced by the sample and said light in the proper intensity regime has been chosen so as to trigger the 2PA phenomenon. Rhodamine B and 6G were used as standard and validation, respectively; relevant cross-sections were also measured. This work is ongoing, and we will discuss the experimental setup as well as the results obtained so far. These preliminaries results are complementary to other studies of femtochemistry for this type of molecules [4]. We are determining the best properties (efficiency of 2PA) with the aim of using these dyes as antennas that can release species with the advantages of enhanced spatial selectivity and deeper light penetration.

#### References

- [1] A. Konar, D. Shah, V. Lozovoy, and M. Dantus. *J. Phys. Chem. Lett.* 2012, 3, 1329–1335
- [2] F. Friedrich, et al., *Chem. Commun.*, 51, 15382 (2015).
- [3] Oulianov, D. A., *Optics communications*, 191, 235-243 (2001).
- [4] Guarín, C. A., J. P. Villabona, López, R., Peon, J. *J. Phys. Chem. B* 2013, 117(24): 7352-7362.

**Session Classification:** PLENARY TALKS

**Track Classification:** SYMPOSIUM ON LASER ABLATION