Accepted Manuscript

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PII: S0167-7322(17)32903-3

DOI: doi: 10.1016/j.molliq.2017.09.058

Reference: MOLLIQ 7895

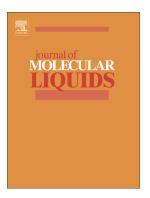
To appear in: Journal of Molecular Liquids

Received date: 1 July 2017

Revised date: 2 September 2017 Accepted date: 16 September 2017

Please cite this article as: Sahar Peyghami, Soheil Sharifi, Forough Rakhshanizadeh, Khalil Alizadeh, Nonlinear optical properties of Rose Bengal: Effect of environment, *Journal of Molecular Liquids* (2017), doi: 10.1016/j.molliq.2017.09.058

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Nonlinear Optical Properties of Rose Bengal: Effect of Environment

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Abstract:

The dye with strong two photon absorption (2PA) at low concentration has application in

Photodynamic therapy. For this reason, the nonlinear optical properties of Rose Bengal in

various solvents, water-surfactant solution and water-in-ionic liquid microemulsion (MEs)

was studied by Z-scan technique with a CW Diode laser at 532nm wavelength and 50mW

power to study the effect of environment on Rose Bengal (RB). The dipole moment of RB in

MEs was determined by using a spectrophotometer and fluorometer and the quantum

perturbation theory. The results disclose that the nonlinear refractive index and 2PA of RB

reduce with the increase of dielectric constant of the medium. Moreover, the NLO properties

and dipole moment of RB depend on the formation of anionic surfactant and MEs.

Keywords: Rose Bengal, Two Photon Absoprtion, Nonlinear Optic, fluorescence, nano-droplets,

dipole moment.

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