Title:	Controlling balance between homo-FRET and hetero-FRET within hetero-chromophoric systems by tuning nature of solvent
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Keywords:	Hetero-chromophoric system Hetero-FRET Homo-FRET Density functional theory Diffusion coefficient
Issue Date:	2020
Publisher:	Elsevier
Citation:	Journal of Molecular Liquids 298,112093
Abstract:	Using fluorescence lifetime and time-resolved fluorescence anisotropy measurements, here we report how the nature of the solvent controls Förster resonance energy transfer (FRET) in a system containing two chromophores, disodium fluorescein and rhodamine-6G, and their aggregates. For water, significant energy transfer between unlike chromophores (i.e. hetero-FRET between fluorescein and rhodamine) is observed with increasing concentration which reduces a bit at higher concentration. In contrast, for glycerol, homo-FRET overwhelms hetero-FRET at higher concentration; a mixed behavior is noted for water-glycerol mixture. Also, the heterogeneity of the system leads to observation of 'dip-and-rise' type temporal fluorescence anisotropy traces. The absence of hetero-FRET at high concentration is explained based on spectral broadening which are further fine-tuned by solvent viscosity. Accompanied density functional theory calculations reveal enhanced stability of rhodamine-6G homo-dimers over other types of dimers which comply with the experimental findings. Thus, the results strengthen our understanding of explicit role of solvent in controlling mechanism of energy transfer within multi-chromophoric aggregates.
URI:	https://www.sciencedirect.com/science/article/pii/S0167732219352602?via%3Dihub (https://www.sciencedirect.com/science/article/pii/S0167732219352602?via%3Dihub) http://hdl.handle.net/123456789/3421 (http://hdl.handle.net/123456789/3421)
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