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# *Powerful tool for diagnostic of NLO properties of specific multifunctional materials for nonlinear optics and nanophothonics applications*

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The development of optoelectronic devices for all optical switching, communications, information processing and storage requires advanced materials with exceptional optical and nonlinear optical properties. The molecular engineering of new photonics self-assembled architectures, including organometallic complexes and highly conjugated systems [1-3], attract renewed and increasing interest due to their potential technological nonlinear optical applications in photonic and nanophotonics devices[1]. Functionalised materials could reveal various interesting optical properties and lead to applications such as fluorescence, light-scattering, optical gain, lasing, optical signal processing, all-optical switching, and optical limiting [4]. Light is eco-friendly and an ideal external stimulus for manipulation of matter at the molecular level. In this talk, we will focus on conjugated compounds based on supramolecular chemistry as good candidate for optoelectronics applications [5] using nonlinear optics experimental techniques such as SHG, THG, and Z-Scan. There is great interest in the development of such photonics self-assembled architectures for nonlinear optical applications. Some interesting results on anisotropic confinement of chromophores that induces second-order nonlinear optics in a nanoporous photonic metamaterial [6] will be also discussed. The obtained properties provide a unique assemblage for exploring interactions in newly designed nanoporous materials.

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