Molecular engineering of octupolar chromophores: towards multifunctional materials

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Abstract

Over the past few decades, we have witnessed the development of multifunctional systems based on molecular materials with large second and third order nonlinear optical (NLO) properties, which have made them attractive candidates for a broad spectrum of high tech applications in the electro-optic and photonic fields (e.g., telecommunications, computing, photopolymerization, optical data storage…) Multiple alternatives are possible: the broad variety of π-conjugated organic systems and architectures provides numerous possibilities in term of molecular design. The present multidisciplinary work is dedicated to the design and in-depth investigation of innovative and stimulable photoactive thin films based on new NLO-actives octupolar materials which will allow high-resolution and high-density 3D information encoding at the supramolecular level. We will present attractive perspectives for the buildup of original chromophores combining in one single molecule several synergetic properties such as two-photon absorption, photochromism, chirality to ensure strong 2nd order nonlinear response and additional liquid crystalline properties to generate really attractive stimuli-responsive, well-organized, anisotropic, soft and malleable supramolecular materials.

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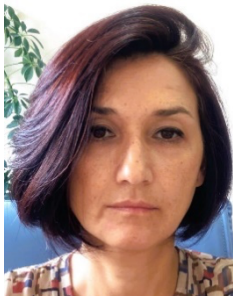
Biography



Huriye Akdas-Kilic obtained her PhD degree at the University of Strasbourg I in 2002 under the supervision of Pr. M. W. Hosseini and Dr. E. Graf. She worked on Molecular tectonics, a strategy dealing with the design and synthesis of molecular tectons or active building blocks and their interconnection into molecular networks in the solid state. Then, she joined the group of Pr. H. L. Anderson in Oxford (UK) and worked on the synthesis of fused porphyrin dimers for non linear optics. In September 2004, she joined the group of Pr. O. Reinaud in Paris and worked on biomimetic chemistry. In september 2006, she joined the group "Organometalliques: Matériaux et Catalyse" in Rennes as Maître de Conférences. Finally in February 2020, she was selected for the 2232 A International Fellowship for Outstanding Researchers TÜBİTAK program and continues her research at Yildiz Technical University (İstanbul/TÜRKİYE). The main research topic concerns the design and synthesis of organic and organometallic chromophores for optoelectronic applications. She published more than 60 papers. Her H-index is 15 on Scopus.

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