

Hard and soft luminescent materials. Properties and applications

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The creation of nano/microstructures based on molecular components possessing defined functionalities is a very fascinating field at the cross point of different disciplines. Our effort, in this talk, focuses on the assembly of functional molecules to form crystalline or soft materials [1,2]. These molecules are able to emit light and their emission can be modulated upon the formation of the assembly, or by the interaction of the materials with other systems. The assembly can therefore be used to probe the environment or can constitute the materials for electroluminescent devices. In particular the possibility to modulate the photophysical properties by controlling the aggregation and the intermolecular interactions between the components is a very fascinating approach to obtain new materials such as fibers or luminescent gels or piezochromic materials [2]. Finally prefabricated scaffold based on silica will be discussed and their use as nanocontainers discussed. Microporous and mesoporous materials have been prepared in different sizes and aspect ratio and functionalized using biomolecules or functional groups. Their addressability using electrical input, and in particular the possibility to measure electrical and magnetoresistance of molecules aligned inside the pores, will be illustrated [3].

[1] M. Mauro, L. De Cola et al. *Angew. Chemie Int. Ed.*, **2010**, *49*, 1222.

[2] C. A. Strassert, L. De Cola et al. *Angew. Chem. Int. Ed.*, **2011**, *50*, 946.

[3] W.van der Wiel, L. De Cola et al submitted.