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Supramolecular control of excited-state electronic properties

The rational design of supramolecular structures endowed with tunable electronic properties is a cornerstone towards bridging the bottom-up and top-down approach to molecule-based electronics. With this in mind, we investigate the use of molecular recognition motifs to direct the formation of selected architectures possessing unique ground- and excited-state electronic properties. Several examples of this approach, including the spontaneous generation of highly emissive organic nano-spheres (Fig. 1) and the formation of fullerene double cables (Fig. 2) will be presented.^[1,2] A unique property of this material, that we have dubbed *photopolism*, is the capability of undergoing a photoinduced switch in the polarization emission. The process is diffraction-limited, and can be used to write information on single crystals that can be read-out from the polarization component of the emitted light (Fig. 3).

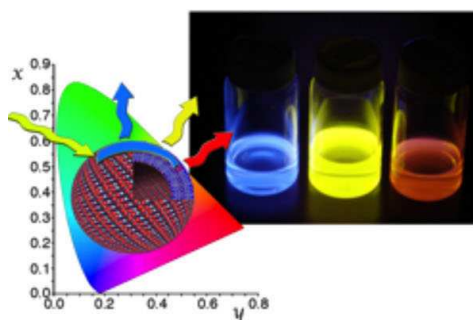


Fig. 1. Self-assembly of luminescent nano-spheres.

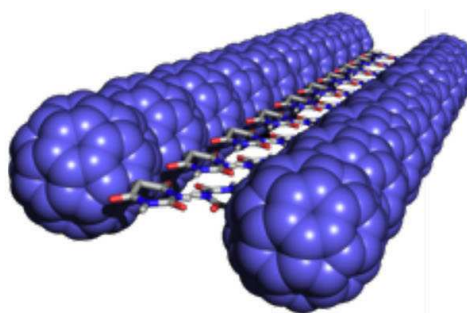


Fig. 2. X-ray structure of a fullerene double-cable.

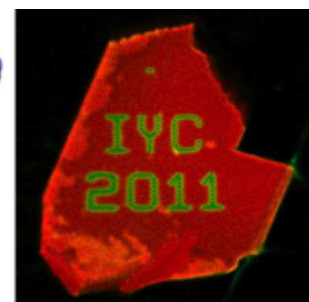


Fig. 3. Photopolitic lithography (80 X 80 μm)

[1]. *Angew. Chem. Int. Ed.* **2011**, *50*, 7032; *Macromolecules* **2013**, *46*, 1591.

[2]. *Angew. Chem. Int. Ed.* **2011**, *50*, 9584; *Phys. Chem. Chem. Phys.* **2012**, *14*, 8859.

Mardi 11 février à 14h ~ Amphi. Buffon~
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