SEMINAIRE ISMO

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" Energy transfer in carbon nanotubes/ chromophores assemblies "

The delocalized p-electronic system of carbon nanotubes allows them to link non-covalently to a large variety of organic molecules. In contrast to covalent functionalization, this mild interaction preserves most of the intrinsic nanotubes properties (photoluminescence, mobility…) but still leads to a strong enough coupling so to give stable supramolecular assemblies and to induce new and efficient functionalities. We focus on nanotubes / chromophores compounds where the latter acts as a nano optical antenna that absorbs light and then transfer almost 100% of the energy to the nanotube.

Compounds made of different chromophores such as metal- or free base porphyrins, porphyrin polymers, and cyanines were synthesized by means of the micelle swelling method. Energy transfer was analysed both on ensembles [5, 6] and at the single compound level. We will first discuss the energy transfer mechanisms in these kinds of supramolecular assemblies. In a second part, we will show that the new functionalities created by the molecules allow to gain new insight into the intrinsic electronic properties of nanotubes.

Mardi 28 janvier 2014 à 11h
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