Ambipolar behavior of Carbon Nanohorns

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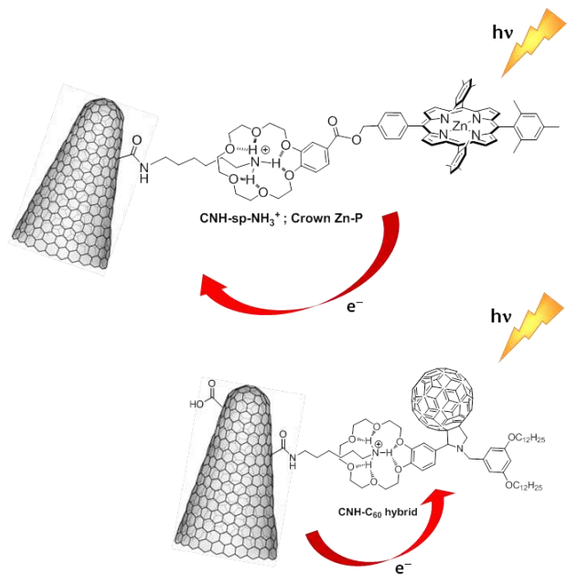
Among the wide range of carbon nanomaterials, Carbon Nanohorns (CNHs) consist on pseudo-cylindrical single-wall tubules with a conical tip. The diameter of the tubular part of a CNH is 2-4 nm with a length of 30-50 nm, and the CNH particles form a spherical assembly 80 nm in diameter. One of the merits of CNHs is that they are generally synthesized by laser ablation of pure graphite without using metal catalyst with high production rate and high yield (around 75%), and typically form radial aggregates (dahlia-like).

Differently to SWCNTs, which can be metallic and semiconducting (a drawback for electronic applications) pristine CNHs show semiconducting properties making them, together to their higher purity and homogeneity aspects (vide supra), of great interest for nanotechnological applications.

Covalent and supramolecular functionalization of carbon nanostructures, as fullerenes or carbon nanotubes, with electron donors has led to a new generation of donor-acceptor nanohybrids which can be used for the development of carbon-based photovoltaic cells.

The electron acceptor ability of CNHs in donor-CNH nanohybrids has been scarcely reported. Nevertheless, the behavior of CNHs when doped with electron acceptors is still unknown.

In this talk we will discuss the most recent advances achieved in this field in our group.



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