Final Report Summary - CHIRALLCARBON (Chiral Allotropes of Carbon)

This project has resulted in important advancements at specific scientific aspects but also of general interest. Thus, we have achieved the first catalytic enantioselective syntheses in fullerene science, by using metallic catalysts and/or organocatalysts under very mild conditions, which have allowed to obtain chiral fullerenes at will. These new systems are of interest for a variety of fields such as, for instance, in materials science as well as in bio-medical sciences. Furthermore, we have also carried out the bio-inspired preparation of highly ordered supramolecular ensembles to form a new type of carbon-based three dimensional materials with a variety of new optoelectronic properties. In this regard, our practical purposes are directed to the generation of liquid crystals with inherent chiral properties and optoelectronic devices for clean energy from photovoltaic solar cells, namely organic solar cells and the most recent perovskites solar cells.

It is also important to remark the achievements on the so-called giant glycofullerenes synthesized along the project which currently represent the most efficient compounds against Ebola virus infection, with efficiencies at the subnanomolar range in vitro studies!