Functionalization of Carbon Nanostructures: how to play a winning game

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Carbon nanostructures (CNS) have emerged as highly innovative nanomaterials for a variety of uses, in disparate fields ranging from catalysis for energy applications to biomaterials and molecular detection for biological use. However, CNS typically suffer from high aggregation propensity in aqueous media, so that their appropriate functionalization becomes a must to tune their properties towards desired applications, whilst preserving their unique features.[1] Here, we discuss how chemical functionalization of CNS is a crucial tool to deliver innovation, especially when the CNS is combined with other components of different nature (inorganic or organic) into hybrid materials with new or improved properties. Examples will range from the application of their electronic properties in catalysis[2] or to connect cells of conductive tissue[3], to their incorporation into supramolecular hydrogel systems that gain self-healing ability, and to molecular detection for analytical use. Using functionalized CNS thus holds great promise in providing innovative solutions to address key challenges across research fields.

References.

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