Carbon dots: synthesis and applications

Martina BORTOLAMI - *Sapienza University of Rome*

Carbon dots (CDs) are quasi-spherical fluorescent carbon-based nanomaterials, with a diameter usually equal to or less than 10 nm. Since their discovery in 2004, several synthetic procedures have been developed over the years, with the aim of modulating their size, the chemical groups present on the surface and therefore their physicochemical properties. Due to their peculiar and interesting features, such as chemical stability, water solubility, low toxicity, excellent biocompatibility, in combination with photoelectric properties, CDs have generated considerable interest in different scientific areas, finding applications in chemical and electrochemical sensors, in photovoltaics, as well as in nanomedicine. A comprehensive and precise overview of CDs will be presented, focusing the attention on their synthetic procedures, their physicochemical properties and on the main applications studied over the years, in particular in the field of nanomedicine.