

Synthesis and surface functionalization of carbon dots for biomedical applications

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Carbon dots (CDs) are promising materials for biomedical applications owing to their unconventional luminescence, biocompatibility, and biodegradability. Various synthesis routes for CDs have been developed in the last few years, and now many research efforts have been focused on improving their functionality. In this aspect, surface modification is a typical approach to control the chemical, optical, and electrical properties of CDs. In particular, there has been considerable progress in surface modification of CDs for controlling optical properties and improving their potential for various biomedical applications, including bioimaging and optogenetics. Here, the important features of CDs are discussed along with our recent findings on these materials and their prospects.