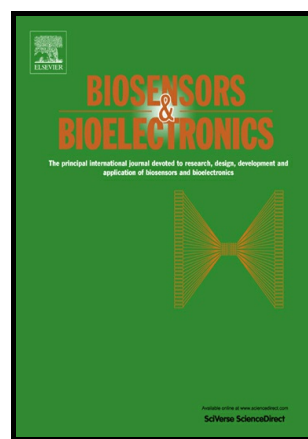


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Highly fluorescent carbon dots as selective and visual probes for sensing copper ions in living cells *via* an electron transfer process

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Abstract

As an integral part of many important enzymes, Cu^{2+} is involved in a number of vital biological processes, which is linked to the oxidative damage and environmental contamination when Cu^{2+} is excessive. In this work, Cu^{2+} can be captured by the amino groups of carbon dots (CDs) to form complexes, resulting in a strong fluorescence quenching of CDs *via* a nonradiative electron transfer process, which offered a rapid, visual, and selective methodology for Cu^{2+} detection. The probe exhibited a wide response concentration range (0.01-2 μM) to Cu^{2+} with a detection limit of 6.7 nM. Significantly, the CDs presented excellent biocompatibility and high photostability, which were applicable for the visualization

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