

Synthesis of carbon dots from onion extract for the detection of mercury (Hg^{2+}) ions

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Carbon dots (CDs) are the interesting fluorescent nanomaterials which employed in different fields due to their optical behavior, biocompatibility, and cost-effectiveness. In this work, eco-friendly, benign CDs were synthesized by one step hydrothermal synthesis using onion extract. The as-prepared CDs have average size about 2-5 nm with blue color emission. The functional group analysis and morphological characterization of the CDs were investigated through Fourier transform infrared spectroscopy (FTIR), X-ray powder diffraction (XRD), UV-Visible spectroscopy, Transmission electron microscope (TEM), and Photoluminescence (PL). A linear relationship was obtained between the relative fluorescence intensity and concentration of Hg^{2+} . The PL intensity of the CDs was quenched with the low detection limit of 0.92 μM by adding different concentrations (0-90 μM) of mercury (Hg^{2+}) ions.