

Synthesis of Carbon Quantum Dots via hydrothermal reaction using L-Lysine

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Since last two decade's fluorescent carbon quantum dots have been gaining much attention due to their fascinating properties such as low toxicity and excellent biocompatibility comparing to cadmium based quantum dots. Herein, we present a facile, simple, and inexpensive aqueous phase nitrogen doped carbon quantum dots production from naturally occurring L-Lysine via one step hydrothermal process. The amino acid quantum dots (AACQDs) was analyzed by using TEM. The AACQDs were round-shaped with an average diameter of ~5.4 nm. The resulting AACQDs exhibit very stable blue fluorescence. The AACQDs were highly dispersible in water due to the carboxyl (-COOH) and nitrogen containing amine (-NH₂) functional groups on their surface. These functional groups were well characterized by using UV-Vis, FTIR, and Zetapotential (ζ). If add Glutathione before treatment, AACQDs have thiol group. The AACQDs can be used for the detection of lead (Pb²⁺) by fluorescence quenching.

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