Supporting information

A new luminescent nanoparticles based on carbon dots/SiO₂ for the detection of latent fingermarks

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1. The FT-IR spectrum of Si-CDs

Fig. S1 FT-IR spectrum of Si-CDs

The pyrolysis of citric acid and the condensation of their pyrolyzed species at high temperature produced CDs with carboxyl groups^[1]. It had been concluded that surface passivation is an effective way to improve the PL of $CDs^{[2]}$. Not only could AEAPTMS (N-(β -2-aminoethyl)- γ -aminopropyltrimethoxysilane) be used as solvent, but it could also be used as functional agent to passivate CDs due to the amine groups it contains.

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The typical IR band of v (C=ONR) at 1653cm⁻¹ was observed in the IR spectrum of synthesized Si-CDs, which stands for the successful passivation of CDs through amidation reaction between the carboxyl group of CDs and amine group of AEAPTMS.

2. The particle size of Si-CDs measured by Dynamic light scattering (DLS) technique.



Fig. S2. Size distribution histogram obtained from the DLS measurement of Si- CDs ethanol solution.

Considering the very easily hydrolysis of silane, the particle size of Si-CDs was measured with DLS method. As shown in Figure S2, the size of the Si-CDs was was about 1.8 nm with a narrow size distribution.

3. Live subject statement

All experiments were performed in compliance with the relevant laws and institutional guidelines. Ethical approval and experiments have been approved by academic committee of People's Public Security University of China (PPSUC). Fingermarks used in this project were from the students and staffs of PPSUC and the informed consent was obtained from everyone participated of this project.

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