

Electronic Supporting Material

Efficient phosphate removal utilizing N, Zn-doped carbon dots as an innovative nanoadsorbent

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1. Characterization

1.1. Quantum yield measurement

The quantum yield (QY) is calculated using a quinine sulfate standard with a QY of 0.54 in 0.1 M H₂SO₄.

$$QY_x = QY_s \cdot \frac{I_x}{I_s} \cdot \frac{A_s}{A_x} \cdot \frac{\eta_x^2}{\eta_s^2} \quad (1)$$

Where 'QY' is the fluorescent quantum yield, 'I' is the integrated fluorescent emission intensity at excitation of 360 nm, 'A' is the optical density, 'η' is the refraction coefficient of a specific solvent (for the distilled water η_x/η_s = 1), 'x' is for the synthesized Zn-N-CDs, and 's' is for the standard.

Table. S1 QY of Zn-N-CDs according to quinine sulfate

Sample	integrated emission intensity at λ _{ex} = 360 nm	Absorption at 360 nm	QY (%)
Quinine sulfate	24297.51	0.052	54
Zn-N-CDs	17357.66	0.042	47.54

2. Figures

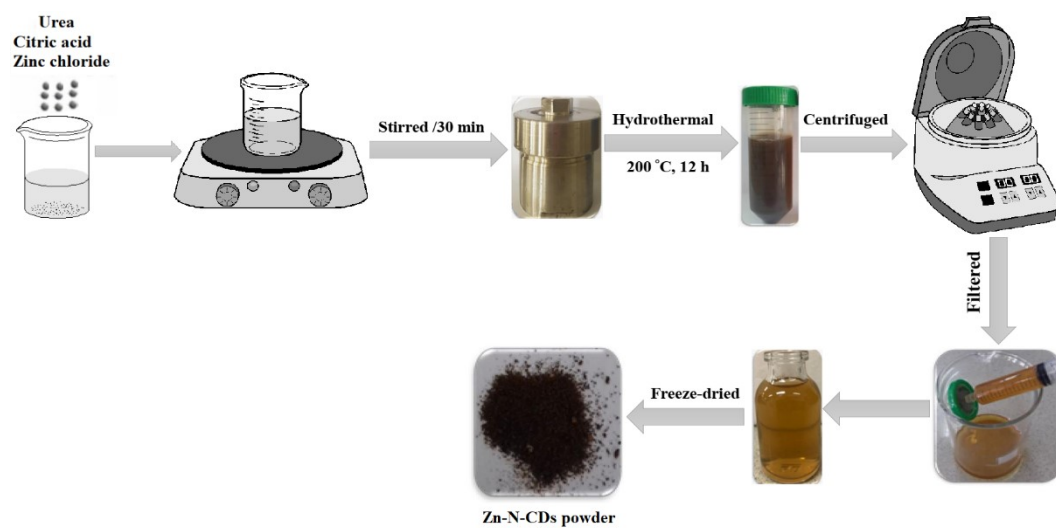


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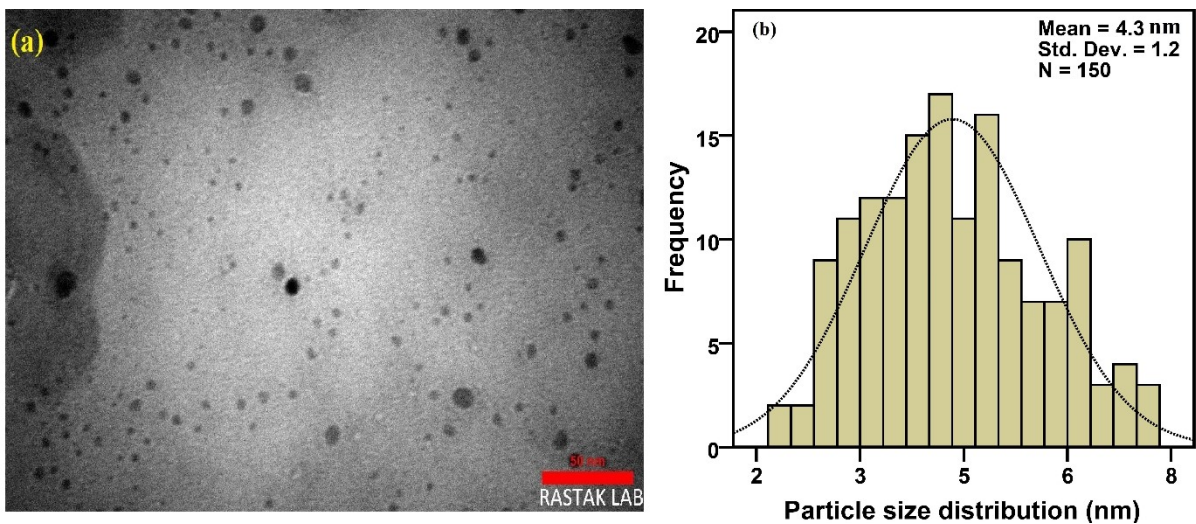


Fig. S2. TEM image of Zn-N-CDs whereas inset shows the particle size distribution histogram

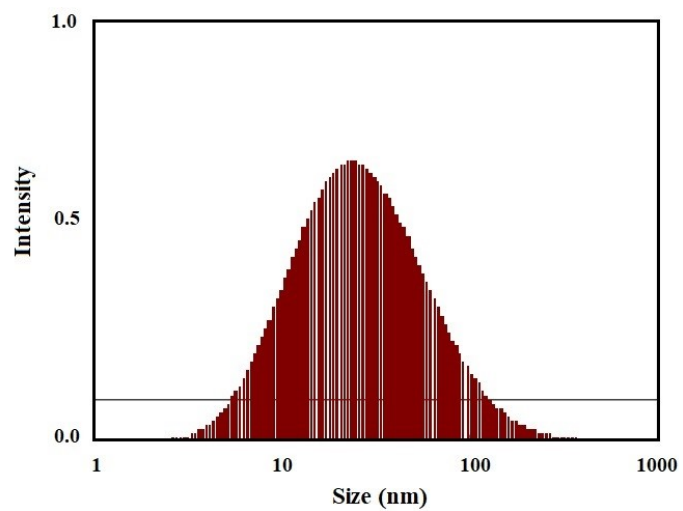


Fig. S3. The mean particle size by dynamic light scattering (DLS) of Zn-N-CDs