Electronic Supplementary Material (ESI) for RSC Advances.

Supporting Information

Nitrogen-doped carbon dots derived from polyamindoamine dendrimer

Juncai Shen, Qing Li, Yan Zhang, Xing-jin She, Cai-Feng Wang and Su Chen*

Table S1. Elemental analysis of the as-prepared CDs.

Elemental	C	O(calculated)	N	H	S
Content (wt%)	46.50%	40.85%	6.99%	4.96%	0.70%

Table S2. Quantum yields (QY) measurements of CDs.

Quinine sulfate (0.1M H_2SO_4 as solvent; QY=0.54) were chosen as standards. The quantum yield was calculated using the following equation (1):

$$Q = Q_R \frac{I\, A_R n^2}{I_R\, A\, n_R^2} \quad (1)$$

Where Q is the quantum yield, I is the measured integrated emission intensity, and A is the optical density, and n is the refractive index. The subscript "R" refers to the reference fluorophore of known quantum yield. The UV-vis absorption spectrometer was used to determine the absorbance of the samples at 345 nm. The concentration of the samples for QY estimation should allow the first excitonic absorption peak to be below 0.05 in order to avoid any significant reabsorption.

Sample	I	A	n	Q
quinine sulfate	10986	0.0352	1.33	54%
Carbon dots	7375	0.0319	1.33	40%

Table S3. Fluorescent lifetime of the CDs.

Lifetime	τ_1(ns)	α_1	τ_2(ns)	α_2	χ^2	$\bar{\tau}$
CDs	2.52	0.748	4.70	0.252	1.05	3.36ns
$\bar{\tau} = \frac{\alpha_1\tau_1^2 + \alpha_2\tau_2^2}{\alpha_1\tau_1 + \alpha_2\tau_2}$						

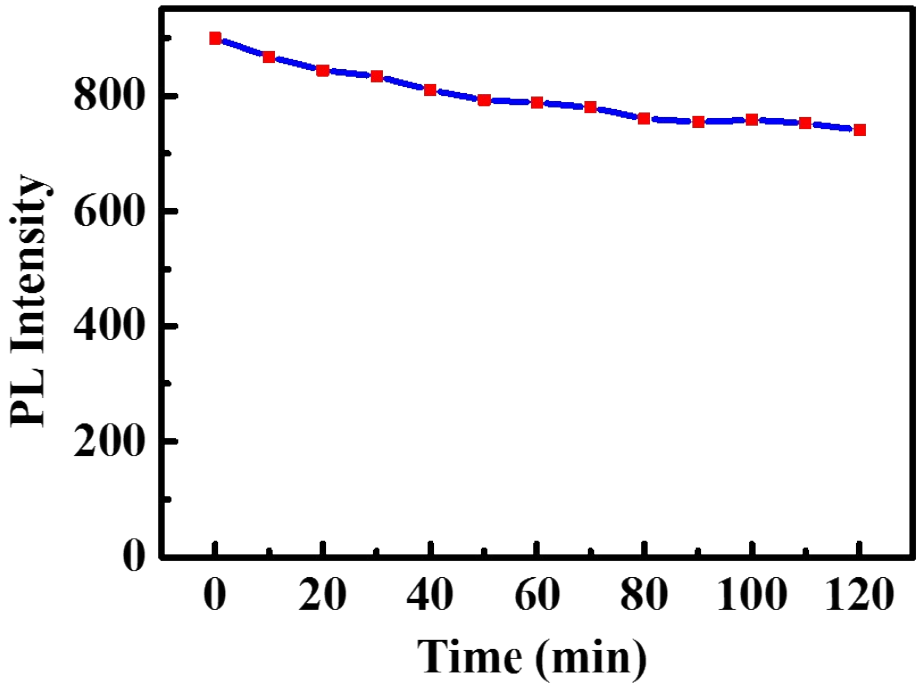

Figure S1. Dependence of fluorescence intensity on UV excitation time for CDs in DI water.

Figure S2. The photograph of Nano-printing device.

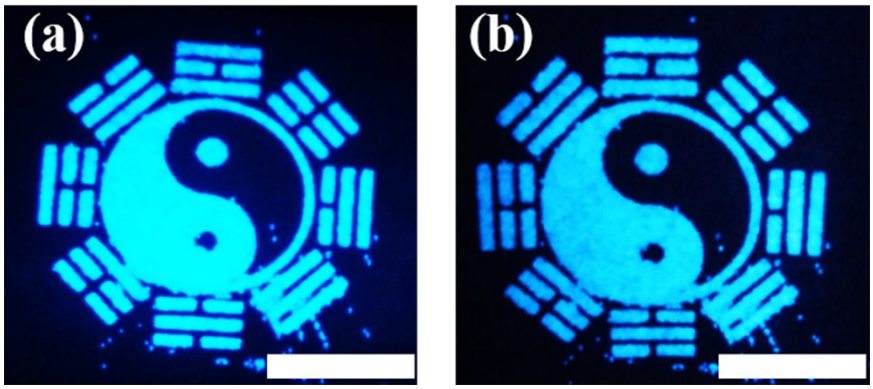

Figure S3. The printed fluorescent patterns under different time: (a) fresh and (b) two months later. (pH =7, scale bar=1cm.)

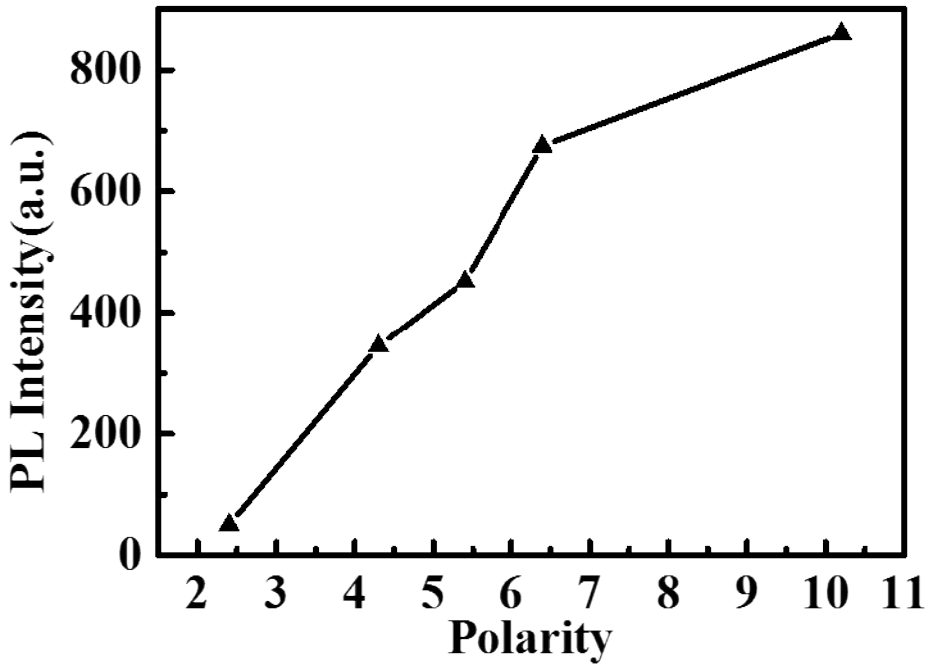

Figure S4. The corresponding fluorescent intensity of CDs dispersed in solvents with different polarity values

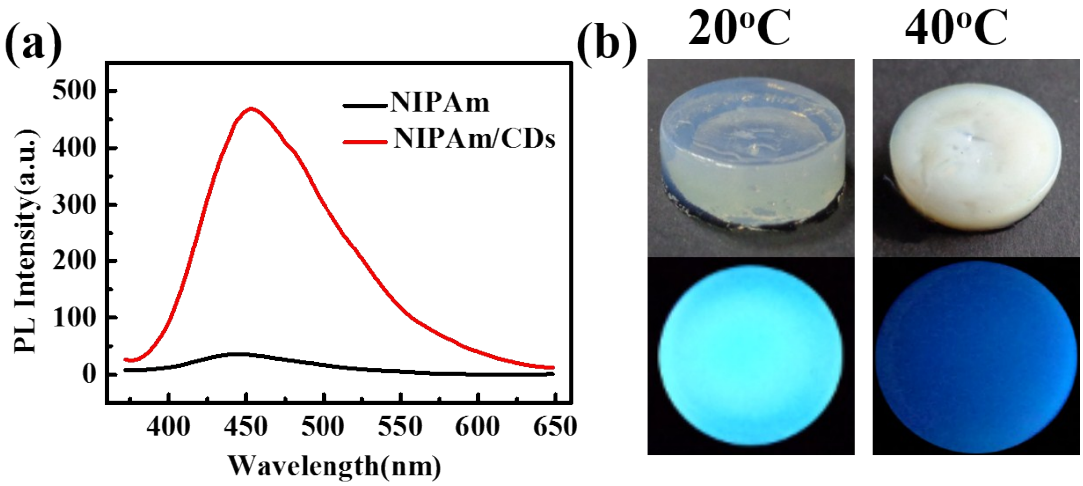

Figure S5. (a) PL spectra of the PNIPAM hybrid and PNIPAM/CDs hybrids under 360 nm excitation. (b)Photographs of PNIPAM/CDs hybrids under daylight (up) and UV light (below).

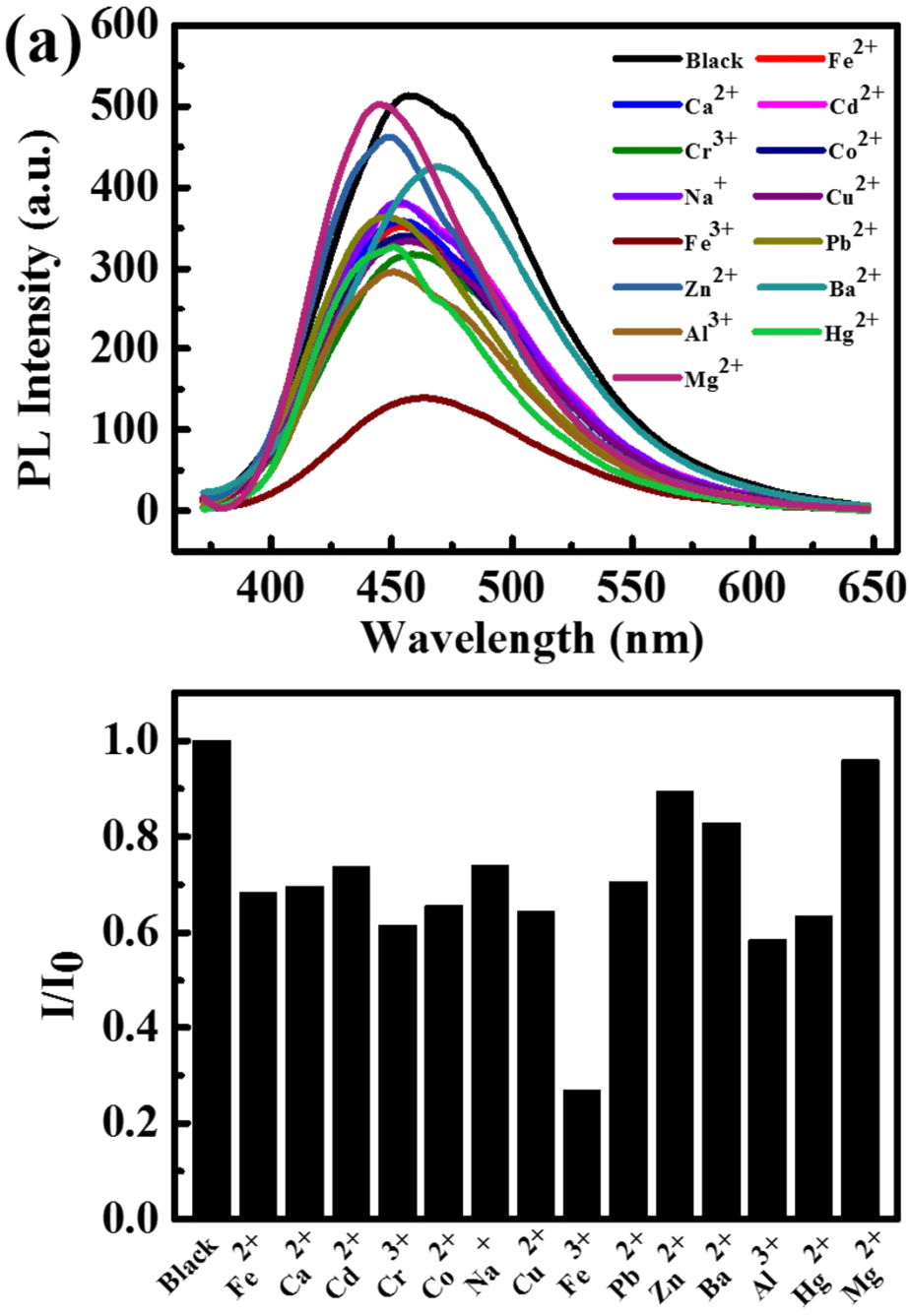

Figure S6. (a) Fluorescence spectra of the CDs solution after addition of different metal ions. (b) Comparison of fluorescence intensities of CDs after the addition of different metal ions.