Electronic Supplementary Material (ESI) for Nanoscale.
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Supporting Information

Self-assembly of fluorescent carbon dots in N,N-dimethylmethanamide solution via Schiff base reaction

Shengliang Hu*, Yanli Ding, Qing Chang, Adrian Trinchi, Kui Lin*, Jinlong Yang, Jun Liu

Experimental section

CDs were prepared by a hydrothermal approach as our described work[16]. In brief, 25 mL ethylene glycol was transferred into a polytetrafluorethylene (PTFE) (Teflon)-lined autoclave of 50 mL and was kept at 200 ℃ for 5 hours. After cooling to room temperature, the solution of CDs with oxygen-contained groups (O-CDs) was obtained. Then 10 mL of O-CDs without further treatment was mixed with 536 μL ethylenediamine by ultrasonic. The mixture was transferred into PTFE autoclave again and kept at 180 ℃ for 5 hours. Thus, CDs contained amine groups (N-CDs) were produced after cooling to room temperature. The obtained solution of N-CDs (0.5 mL) was mixed with 2.0 mL of N,N-dimethylmethanamide (DMF). The resulting mixture was stood at room temperature for 5 days and then some depositions were observed. After removing supernatant liquid, the carbon dot powders were obtained.

Transmission electron microscopy (TEM), high-resolution TEM (HRTEM) images and electron energy loss spectroscopy (EELS) were obtained using a FEI Tecnai G2 F20 microscope with a field-emission gun operating at 200 kV. Scanning electron microscope (SEM) and energy dispersive X-ray spectroscopy (EDS) were performed on a Hitachi S-4800 scanning electron microscope. Fluorescence spectra and absorption were collected on a Hitachi F4500 fluorescence spectrophotometer and a Shimadzu UV-2550 UV-vis spectrometer, respectively. The infrared spectra were obtained on a Thermo Nicolet 360 FT-IR spectrophotometer. XPS data of all samples was collected by a Kratos AXIS 165

mutitechnique electron spectrometer having an Al K_a X-ray source for determining the composition and chemical bonding configurations.

Other results

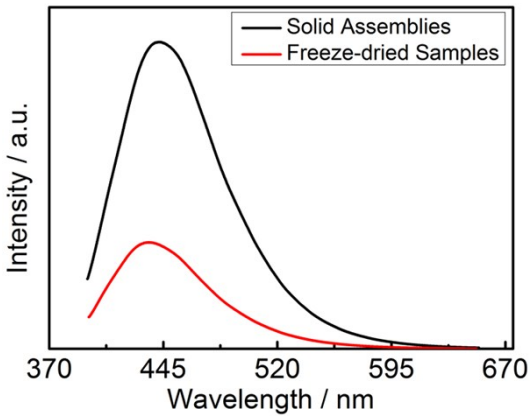

Figure S1 PL comparasions between solid assembiles and freeze-dried powders of N-CDs.

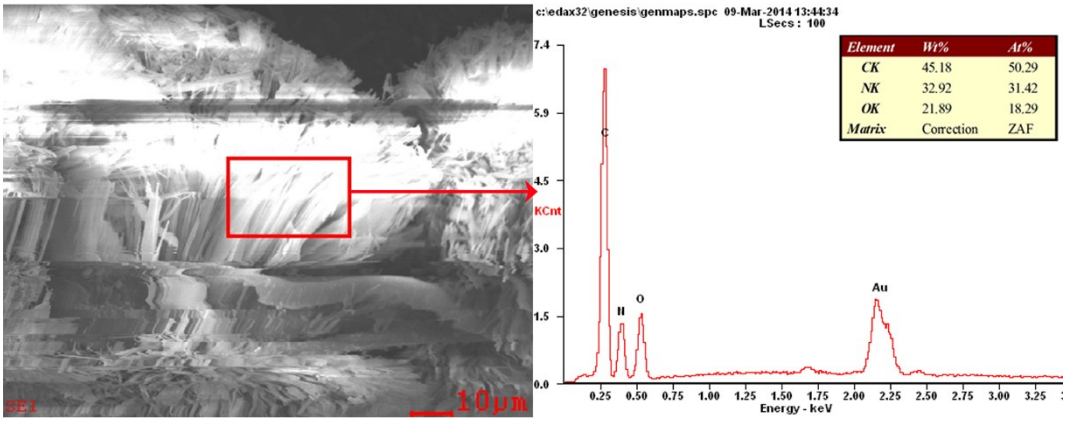

Figure S2. EDS analysis of the precipitates

Table S1. The effects of the volume ratios of $V_{N\text{-}CDs}$ / V_{DMF} on the precipitate formation, where --- represents no precipitate formation after ten days.

	$V_{N\text{-}CDs}$ / mL	V_{DMF} / mL	**Precipitating time**
1	2	0	---
2	0	2	---
3	0.1	2	**5 hours**
4	0.3	2	**24 hours**
5	0.5	2	**5 days**
6	1	2	**7 days**
7	**1.5**	**2**	---

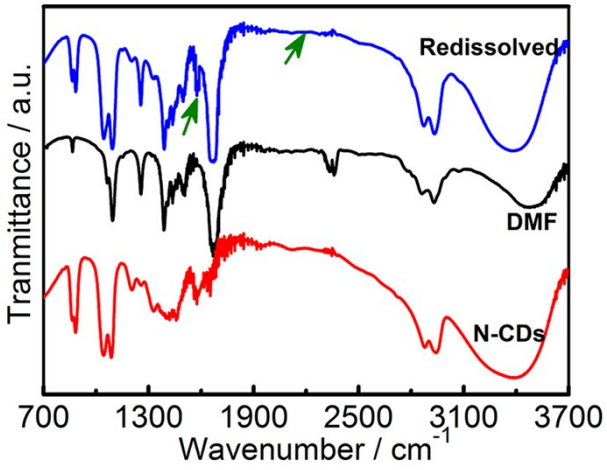

Figure S3. Comparisons of FTIR spectra of the re-dissolved precipitates, DMF and N-CDs

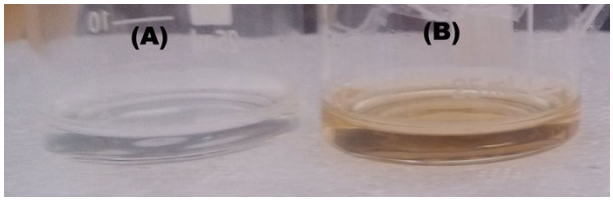

Figure S4. The photos of the blending solution of O-CDs and DMF (A), Cl-CDs and DMF (B), respectively.

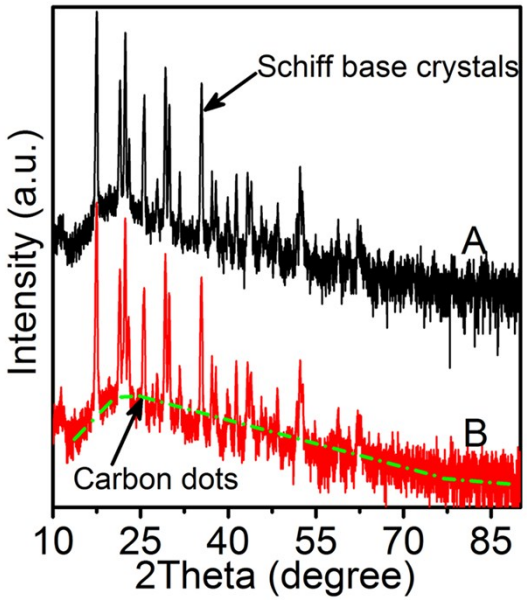

Figure S5 XRD patterns of the solid assembiles (A) and ramified precipitates (B).