Ratiometric Fluorescent Detecting Trace Water in Organic Solvent Based on Aggregation-Induced Emission Enhanced Cu Nanoclusters

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Fig. S1 (a) The XPS survey spectrum of the CDs; inset: C 1s XPS spectrum of the CDs.



Fig. S2 The Zeta potential of CDs shows two peaks at -13.4 mV and 20.0 mV andcorrespondingareas(%)are85.4and14.6.



Fig. S3 FT–IR spectra of GSH-CDs (a) and CDs/Cu NCs (b).



Fig. S4 The emission spectrum of fluorescence Cu NCs, inset legends are the photographs of as-prepared Cu NCs under visible light and 365 nm UV light illumination.



Fig. S5 The Abs spectrum of Cu NCs and Em spectrum of CDs.



Fig. S6 Reversibility of CDs/Cu NCs in DMSO by introducing an equivalent mole of H_2O and DCC.



Fig. S7 The PL spectra (excitation at 372 nm) of CDs/Cu NCs in ACN with an increase of the amounts of water from 0.00 to 5.00 v/v%; (b) The relationship between ratiometric fluorescence intensity (I_{596}/I_{450}) and water contents, inset: the corresponding fitting curve; (c) CIE chromaticity diagram showing the (x,y) color coordinates of CDs/Cu NCs varying with water.



Fig. S8 The PL spectra (excitation at 372 nm) of CDs/Cu NCs in THF with an increase of the amounts of water from 0.00 to 5.00 v/v%; (b) The relationship between ratiometric fluorescence intensity (I_{596}/I_{450}) and water contents, inset: the corresponding fitting curve; (c) CIE chromaticity diagram showing the (x,y) color coordinates of CDs/Cu NCs varying with water.

Organic solvents	Linear range	R ²	Detection limit(v/v)
DMSO	0.30%-5.00%	0.9915	0.02%
DMF	0.02%-2.50%	0.9961	0.02%
THF	0.30%-5.00%	0.9931	0.05%
ACN	1.00%-5.00%	0.9861	0.05%

Table S1 Comparison of the linear range, linear correlation coefficient, and detection

 limit of water contents detection in various organic solvents.



Scheme S1 Schematic diagram of dehydration condensation of amino acids and the photographs fluorescence color of CDs/Cu NCs changes with the produced water.