Supporting Information

Silver nanoclusters-based fluorescent probe for detection of trace water in organic solvents with its potential application in reaction monitoring

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Table S1 Comparison of water detection methods based different materials.

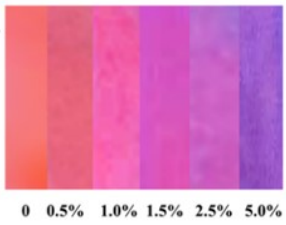
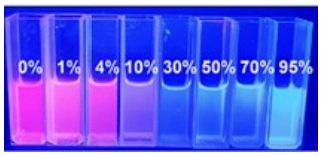
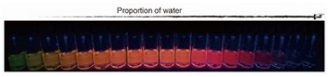
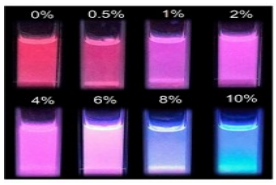
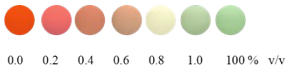
Materials	detection range	detection limit	reaction time	visualization effect	reference
Ru@MIL-NH_2	0.05−5%	0.02%	less than 1 min		Analytical Chemistry, 2017, 89 (24), 13434-13440.
Eu-organic frameworks	1-99.5	0.024%	--		Dyes and Pigments 206 (2022) 110602
carbon dots	0.1–5%	0.068%	--		New J. Chem., 2023, 47, 1985–1992
Eu-organic framework	0.05−10 %	0.02%	within 3 s		Anal. Chem. 2019, 91, 4845−4851
Cu nano clusters	0.00–5.00%	<0.02%	--		The Analyst, 2018, 143 (13), 3068 3074.
Silver nanoclusters	0.2-1.0%	<0.2	within 3 s		

Table S2 The composition of the LTA-Ag determined by XPS

element	Ag	Na	Si	Al	O
content（%）	10.7	5.03	16.47	15.78	52.02

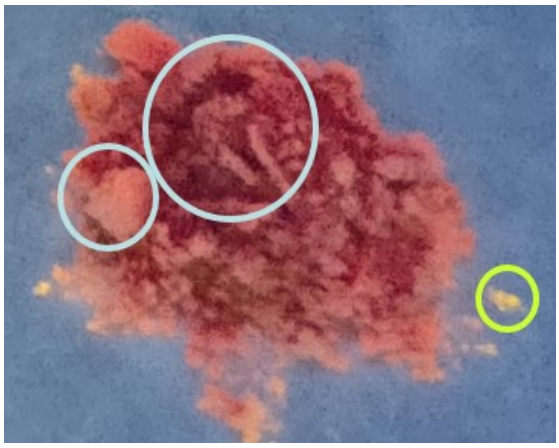


Figure S1 Luminescence color of LTA-Ag material after being placed in air for a few seconds under UV excitation at 365 nm.

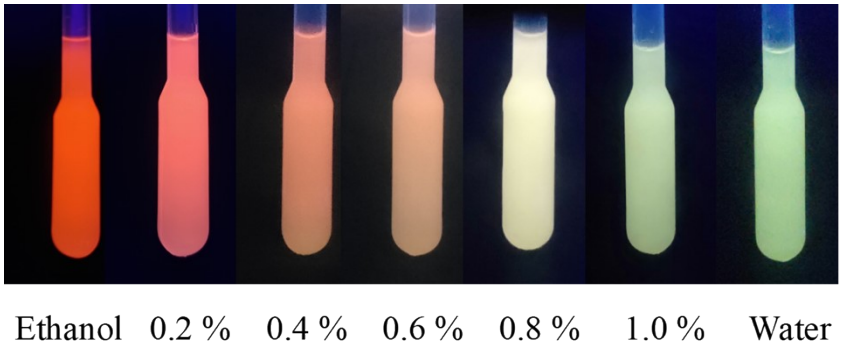


Figure S2. The digital photo of LTA-Ag with different water content under UV light of 365 nm.

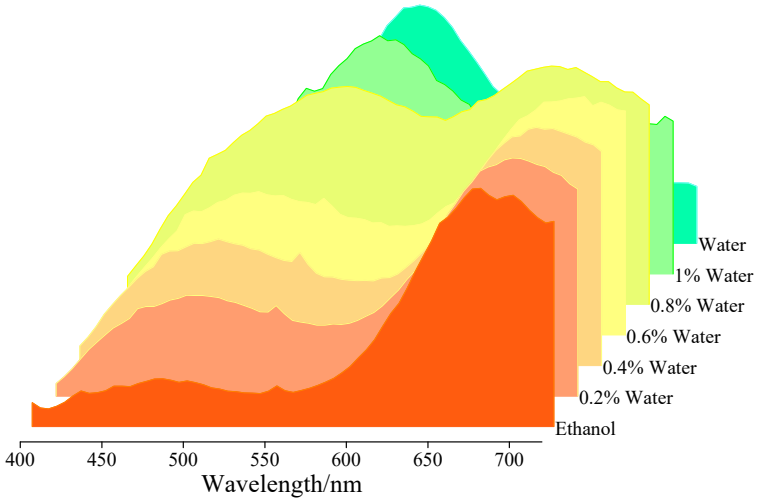


Figure S3 Emission spectra of LTA-Ag with different water content.

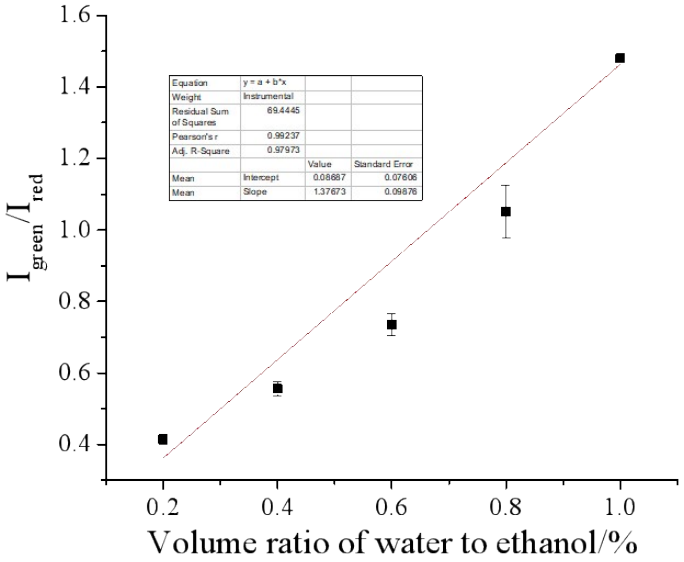


Figure S4. Linear relationship of the I_{green}/I_{red} with different water content.

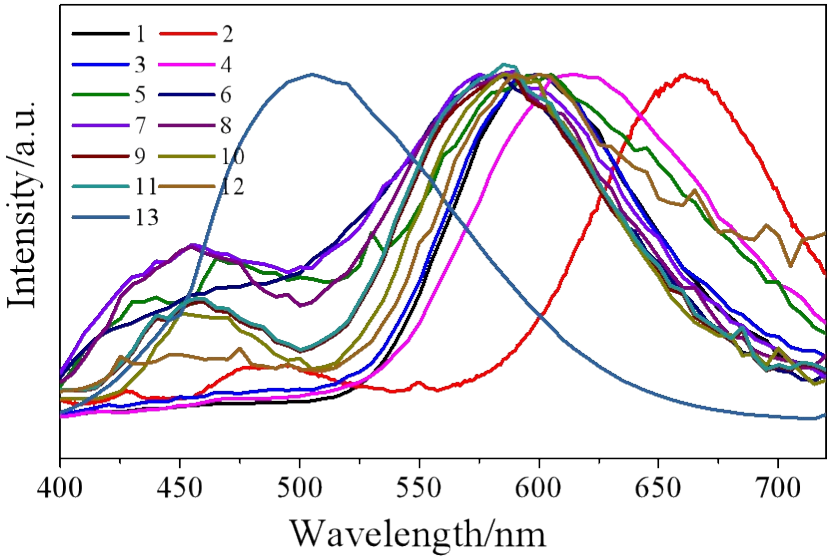


Figure S5 Emission spectra of LTA-Ag dispersed in different solvents excited at 365 nm (1. methanol; 2. ethanol; 3. ethylene glycol; 4. n-propanol; 5. benzyl alcohol; 6. n-octanol; 7. n-butanol; 8. n-pentanol; 9. sec-butanol; 10. n-hexanol; 11. acetic acid; 12. ethyl acetate; 13. water).

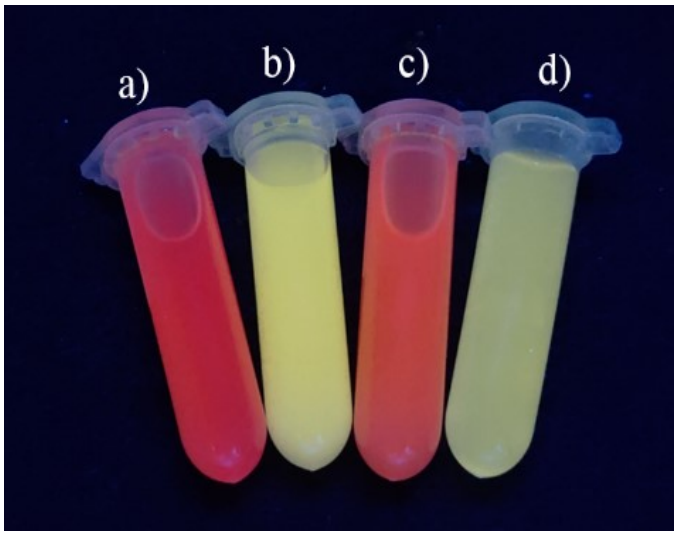


Figure S6 Digital photographs of a) LTA-Ag in dehydration; b) LTA-Ag in hydration; c) LTA-Ag in dehydration after seven dehydration-hydration cycles; d) LTA-Ag in hydration after seven dehydration-hydration cycles, excited at 365 nm.

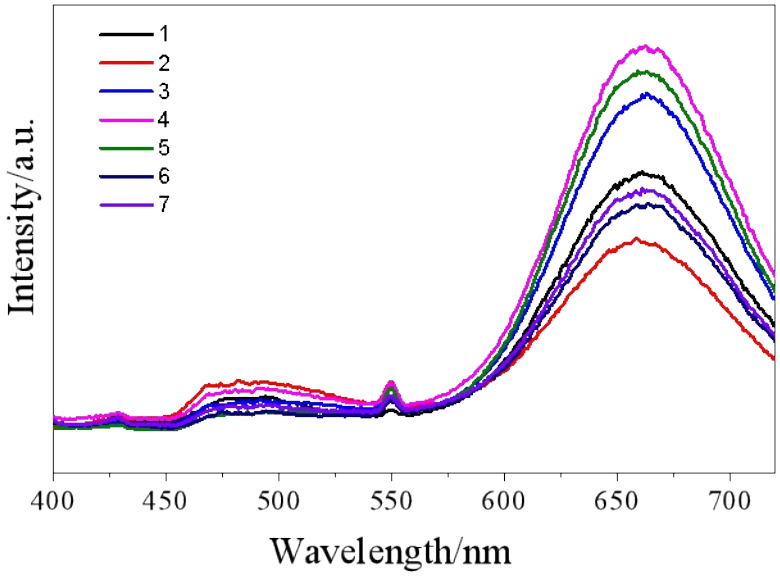


Figure S7 Emission spectra of LTA-Ag in dehydrated state after several cycles excited at 365 nm.

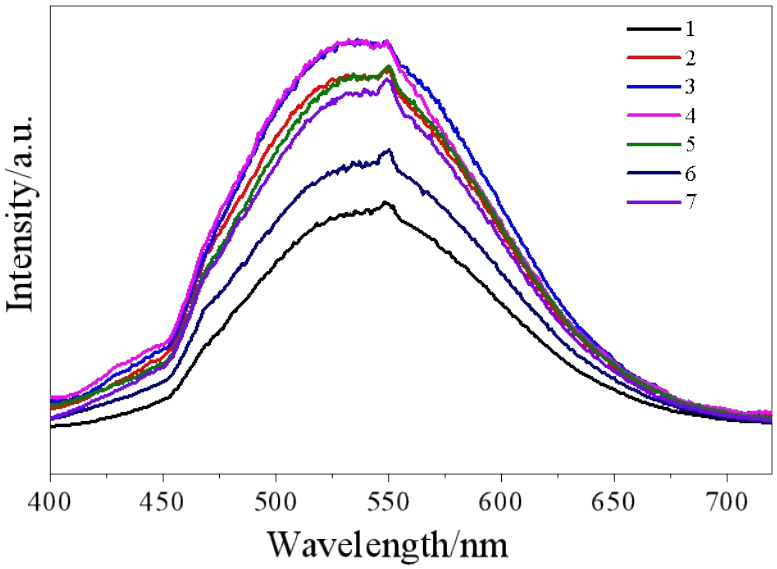


Figure S8 Emission spectra of LTA-Ag in hydrated state after several cycles excited at 365 nm.

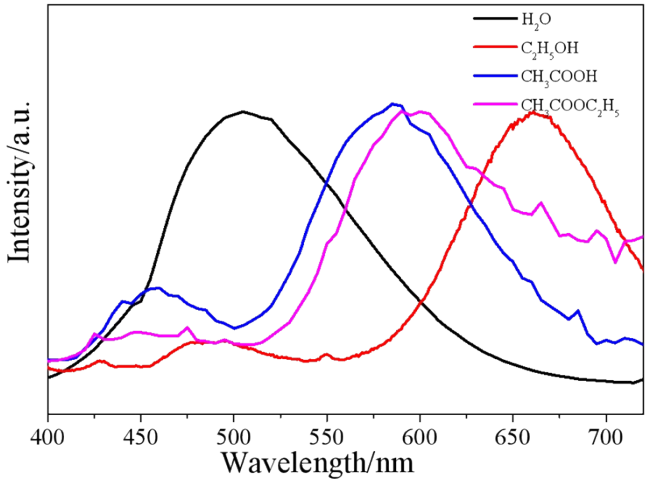


Figure S9 Emission spectra of LTA-Ag in water, ethanol, acetic acid and ethyl acetate.