Supporting Information

Specific recognition of formaldehyde by a cucurbit[10]uril-based porous supramolecular assembly incorporating adsorbed 1,8-diaminonaphthalene

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Figure S1. Powder X-ray diffraction analyses of A (a) simulation and (b) experiment; (c) FG13@A and (d) FG13@A with adsorbed formaldehyde.
Figure S2. TG (top) and DTA (bottom) curves of A in N₂.
Figure S3. The SEM images of A.

Figure S4. The TEM image of A.
Table S1. General survey of loading A with 16 FGs to form luminescent FG@A assemblies: (first column) FGs; (second column) fluorescence spectra of the solid FGs and the corresponding FG@A.

<table>
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<td>FG4</td>
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Phenanthrene
FG5

Rhodamine B
FG6

9-Anthracencarboxaldehyde
FG7

8-Hydroxyquinoline
FG8
7-Hydroxycoumarin
FG9

Pyrrene
FG10

Dansyl chloride
FG11

Thioflavin T
FG12
1,8-Diaminonaphthalene
FG13

Thiabendazole
FG14

Acridine-3,6-diamine
FG15

Acridine Orange
FG16
Figure S5. $^1$H NMR spectra in deuterated acetonitrile: (a) 0.5 mL 0.01 M FG13, (b) 0.5 mL 0.01 M FG13 containing 10 mg of A.
Figure S6. General survey of fluorescence spectra of FG1@A loaded with the 20 respective VOCs.

Figure S7. General survey of fluorescence spectra of FG2@A loaded with the 20 respective VOCs.
Figure S8. General survey of fluorescence spectra of FG3@A loaded with the 20 respective VOCs.

Figure S9. General survey of fluorescence spectra of FG4@A loaded with the 20 respective VOCs.
Figure S10. General survey of fluorescence spectra of FG5@A loaded with the 20 respective VOCs.

Figure S11. General survey of fluorescence spectra of FG6@A loaded with the 20 respective VOCs.
Figure S12. General survey of fluorescence spectra of FG7@A loaded with the 20 respective VOCs.

Figure S13. General survey of fluorescence spectra of FG8@A loaded with the 20 respective VOCs.
Figure S14. General survey of fluorescence spectra of FG9@A loaded with the 20 respective VOCs.

Figure S15. General survey of fluorescence spectra of FG10@A loaded with the 20 respective VOCs.
Figure S16. General survey of fluorescence spectra of FG11@A loaded with the 20 respective VOCs.

Figure S17. General survey of fluorescence spectra of FG12@A loaded with the 20 respective VOCs.
Figure S18. General survey of fluorescence spectra of FG13@A loaded with the 20 respective VOCs.

Figure S19. General survey of fluorescence spectra of FG14@A loaded with the 20 respective VOCs.
Figure S20. General survey of fluorescence spectra of FG15@A loaded with the 20 respective VOCs.

Figure S21. General survey of fluorescence spectra of FG16@A loaded with the 20 respective VOCs.
Figure S22. (a, c, e, g, i) Titration fluorescence spectra of the loading of FG13@A with acetonitrile:formaldehyde = 0:1, 10:1, 100:1, 1000:1, 10000:1; (b, d, f, h, j) profiles of fluorescence intensity of FG13@A vs. adsorption time with acetonitrile:formaldehyde = 0:1, 10:1, 100:1, 1000:1, 10000:1; (k) titration fluorescence spectra of the loading of FG13@A with acetonitrile; (l) overall profiles of fluorescence intensity of FG13@A vs. adsorption time.
Figure S23. Formaldehyde response experiments of FG13@A test paper in acetonitrile: 1, neat; 2, 1.0×10^{-3}; 3, 1.0×10^{-2}; 4, 1.0×10^{-3}; 5, 1.0×10^{-4}; 6, 1.0×10^{-5}; 7, 1.0×10^{-6}; 8, 1.0×10^{-7}; 9, 1.0×10^{-8}; 10, 1.0×10^{-9}; 11, 1.0×10^{-10}; 12, 1.0×10^{-11}; 13, 1.0×10^{-12} mol/L of formaldehyde.

Figure S24. Adsorption experiments on FG13@A using formaldehyde at different concentrations: 1, 1.0; 2, 0.5; 3, 0.1; 4, 0.05; 5, 0.01; 6, 5×10^{-3}; 7, 1×10^{-3}; 8, 5×10^{-4}; 9, 1×10^{-4}; 10, 5×10^{-5}; 11, 1×10^{-5}; 12, 5×10^{-6}; 13, 1×10^{-6} mol/L in acetonitrile.
Figure S25. Amorphous Q[10] loaded with FG13 to form luminescent assembly FG13@Q[10]: fluorescence spectra of solid FG13 and FG13@Q[10], respectively.

Figure S26. Titration fluorescence spectra of FG13 (1 × 10⁻⁵ mol·L⁻¹) upon gradual addition of formaldehyde.
Figure S27. Fluorescence spectra of the solid FG13@A and the FG13@A loaded with formaldehyde and acetaldehyde, respectively.