

Supporting Information

A novel β -cyclodextrin-based molecular-responsive photonic hydrogel chemosensor for highly sensitive and visual detection of 2-naphthol

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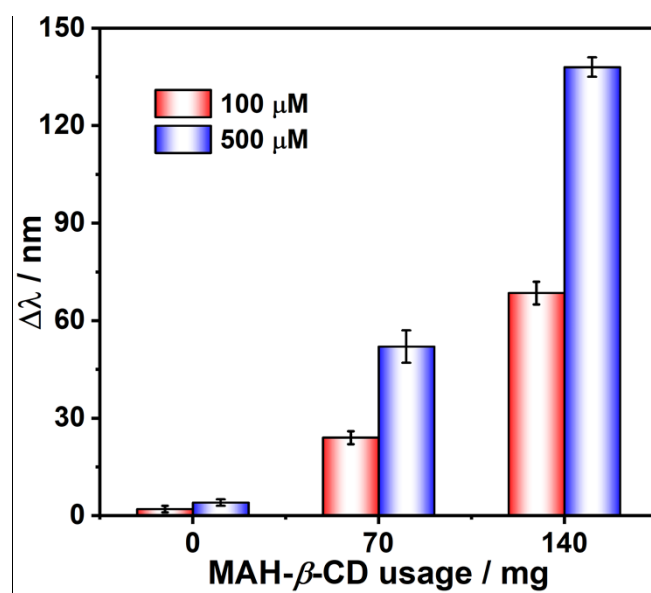


Fig. S1. (a) Response of the PNACD hydrogels synthesized with different MAH-β-CD usages to 100 and 500 μM 2-NAP solutions.

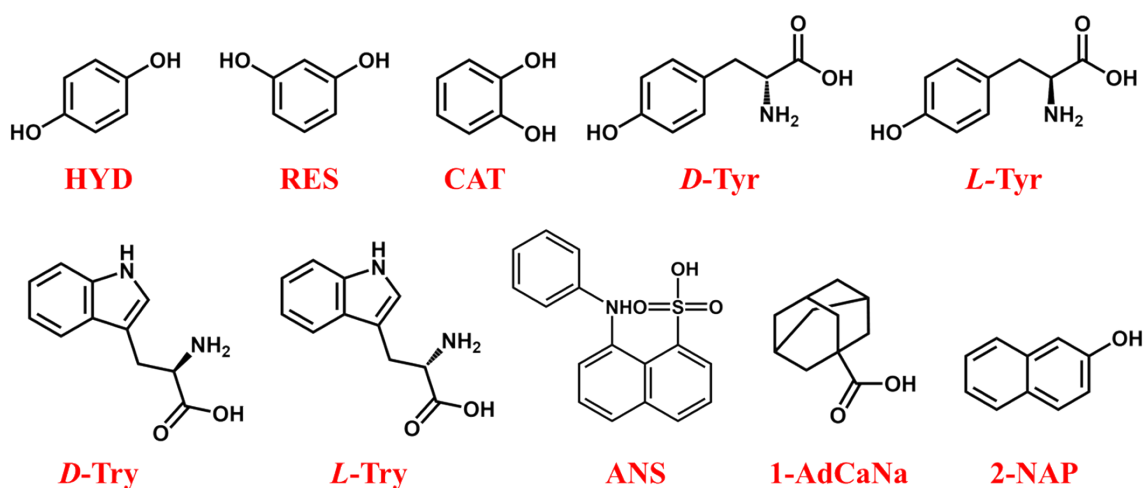


Fig. S2. The molecular structures of the guests used in this work. Hydroquinone (**HYD**), Resorcinol (**RES**), Catechol (**CAT**), *D*-tyrosine (**D-Tyr**), *L*-tyrosine (**L-Tyr**), *D*-tryptophan (**D-Try**), *L*-tryptophan (**L-Try**), 8-Anilino-1-naphthalenesulfonic acid (**ANS**), 1-Admantanecarboxylic acid sodium salt (**1-AdCaNa**), and 2-naphthol (**2-NAP**).

Table S1 Comparison of the 2-NAP detection by the PNACD hydrogel sensor and other reported methods.

Sensing material	Method	Instrument	Sample pretreatment	Cost	Linear detection range (μM)	lowest detection con. (μM)	Ref.
Fe@MgAL-LDHs	HPLC	HPLC	Complex	High	0.004–1.39	0.0013	[1]
Rh 6G-CD-AuNPs	Fluorescence	Fluorescence spectrometer	Complex	High	0.1–20	0.05	[2]
β -CD/TiO ₂ -QCM	QCM	Frequency counter	Complex	Medium	1–120	0.215	[3]
CoAl-LDHNS@ZIF-67/GCE	DPV	Electrochemical workstation	Medium	Medium	0.3–150	0.082	[4]
rGO@ZIF-8/GCE	Amperometry	Electrochemical workstation	Medium	Medium	0.02–15	0.017	[5]
CPT-BDD/GCE	DPV	Electrochemical workstation	Simple	Medium	0.2–3.85	0.1	[6]
P3MT-nanoAu/GCE	SDV	Electrochemical workstation	Simple	Medium	1–150	0.3	[7]
MWCNTs-nanoPt/GCE	LSV	Electrochemical workstation	Simple	Medium	1–800	0.6	[8]
PNACD hydrogel	Visual	Fiber spectrometer	Simple	Low	0.01–250	0.01	this work

Note: Fe@MgAL-LDHs, magnetic Fe@MgAl-layered double hydroxides composites; Rh 6G-CD-AuNPs, rhodamine 6G-incorporated- β -CD functionalized gold nanoparticles; QCM, Quartz crystal microbalance; CoAl-LDHNS@ZIF-67/GCE, glassy carbon electrode modified with zeolitic imidazole frameworks (ZIF-67) deposited layered double hydroxide nanosheets (LDHNS); rGO@ZIF-8/GCE, glassy carbon electrode modified with ZIF-8 deposited reduced graphene oxide; CPT-BDD, cathodically pretreated boron-doped diamond electrode; P3MT-nano-Au/GCE, glassy carbon electrode modified with poly(3-methylthiophene) incorporated gold nanoparticles; MWCNTs-nanoPt/GCE, glassy carbon electrode modified with multi-wall carbon nanotubes/Pt nanoparticles; MSPE, magnetic solid-phase extraction; DPV, differential pulse voltammetry; SDV, semi-derivative voltammograms; LSV, linear sweep voltammetry; GC-MS/MS, gas chromatography-tandem mass spectrometry; HPLC, high performance liquid chromatography. LDC: the lowest detection concentration.

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