

## Trace Detection of Homologues and Isomers Based on Hollow Mesoporous Silica Sphere Photonic Crystals

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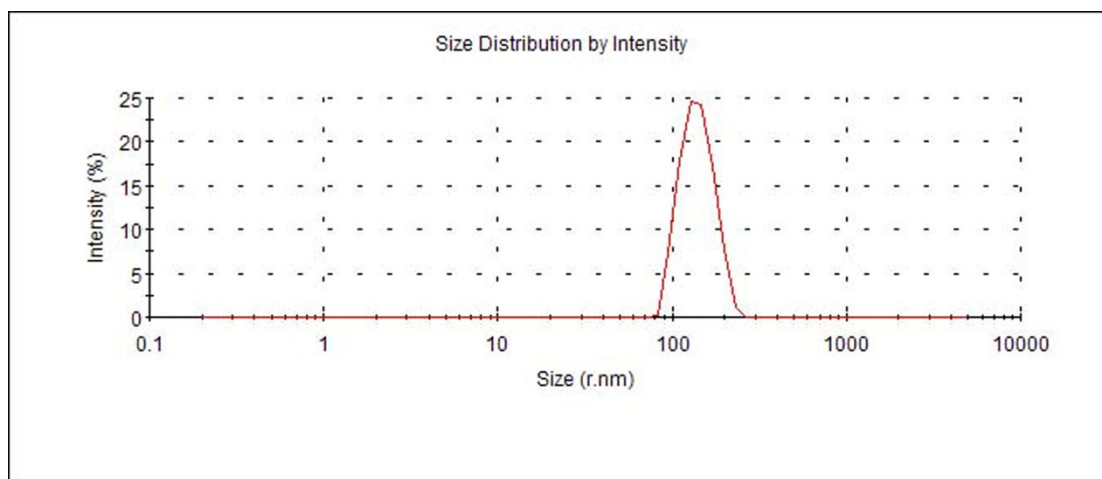


Fig.S1 Size distribution of the HMSSs-200/260.

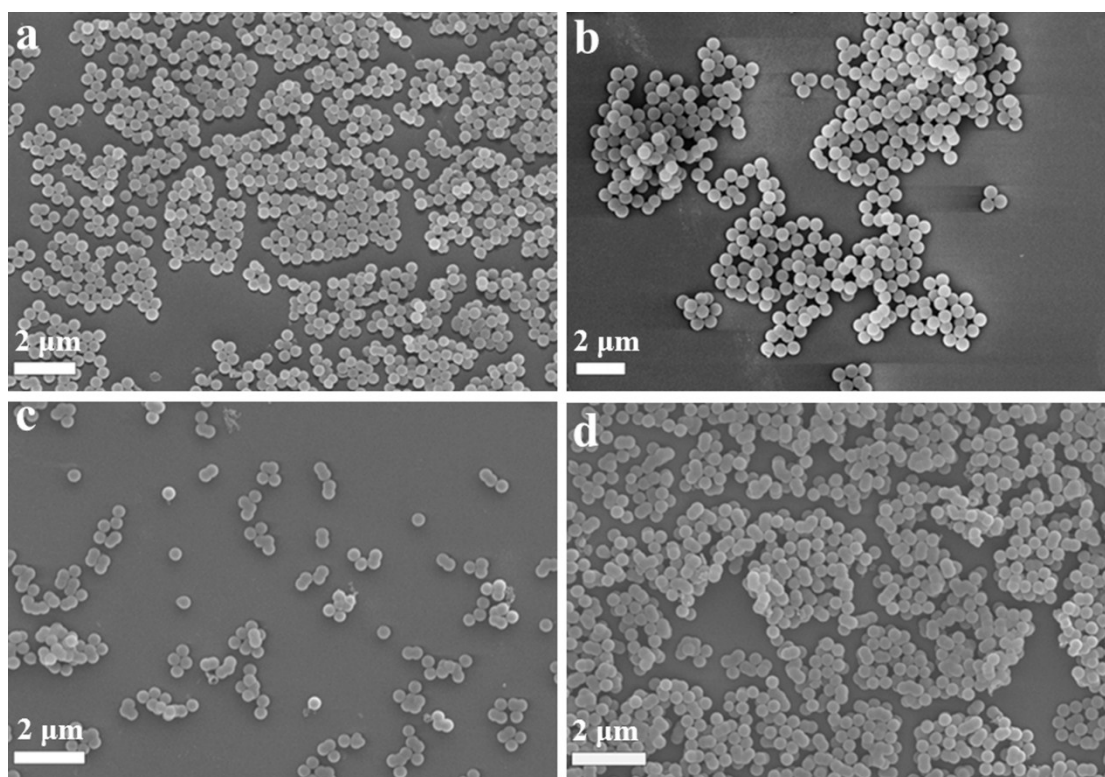
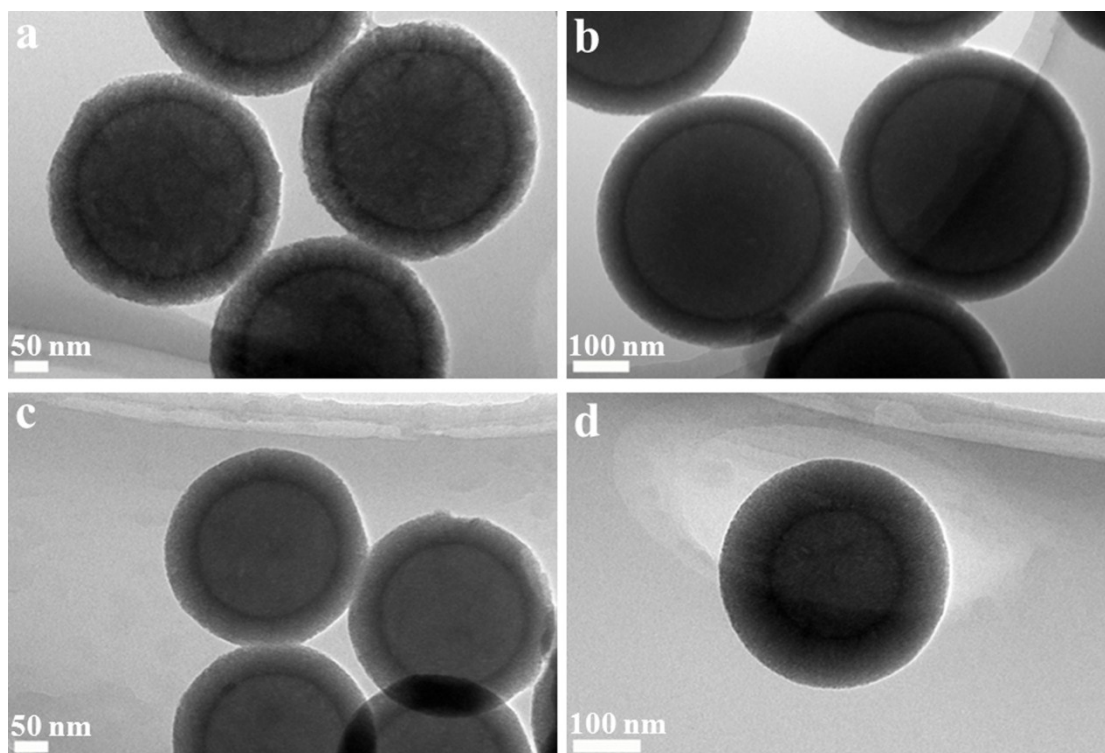
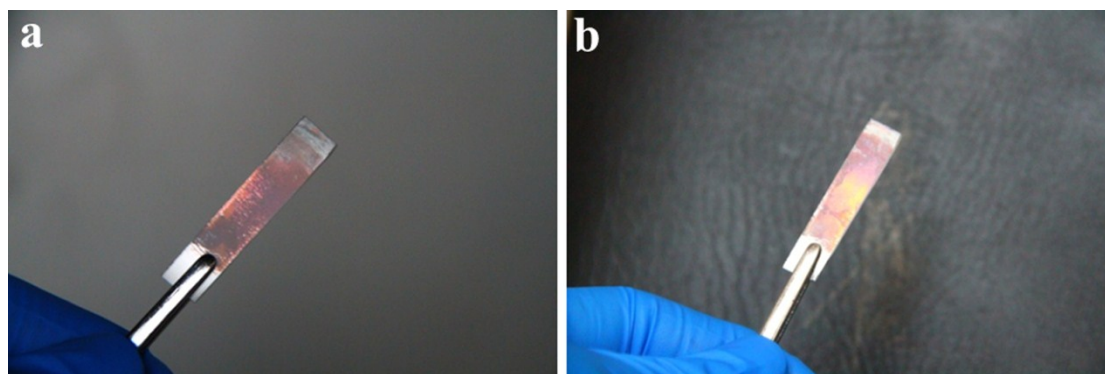


Fig. S2 SEM images of HMSSs with different inner and outer diameters: (a) HMSSs-265/360, (b) HMSSs-370/475, (c) HMSSs-200/300, and (d) HMSSs-200/330.



**Fig. S3** TEM images of HMSSs with different inner and outer diameters: (a) HMSSs-265/360, (b) HMSSs-370/475, (c) HMSSs-200/300, and (d) HMSSs-200/330.



**Fig. S4** Optical photographs of the HMSSs-200/260 PC in (a) air and (b) ethanol.

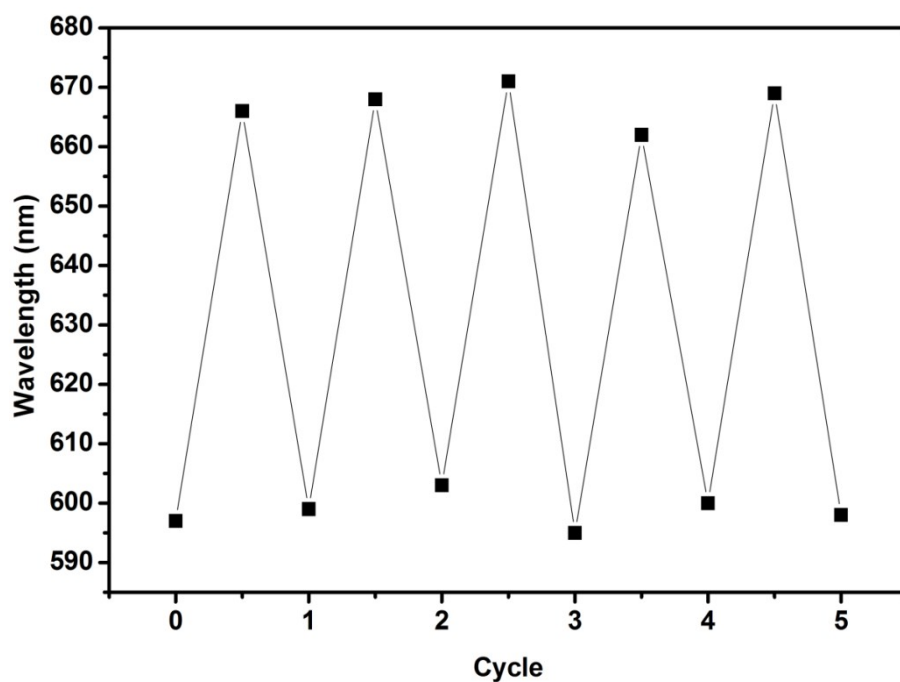


Fig. S5 Reversible stopband movements for the HMSSs-200/260 PC alternately infiltrated by air and ethanol.

Table S1 Refractive indices and stopband shifts of homologues or isomers.

Chemicals	$n$	Stopband shift/nm
Methanol	1.329	64
Ethanol	1.362	105
n-Propanol	1.385	145
iso-Propanol	1.377	120
n-Butanol	1.399	134
iso-Butanol	1.398	141
Benzene	1.501	173
o-Xylene	1.505	190
m-Xylene	1.495	165
p-Xylene	1.497	158
Ethanolamine	1.454	137
Diethanolamine	1.476	148
Triethanolamine	1.482	156

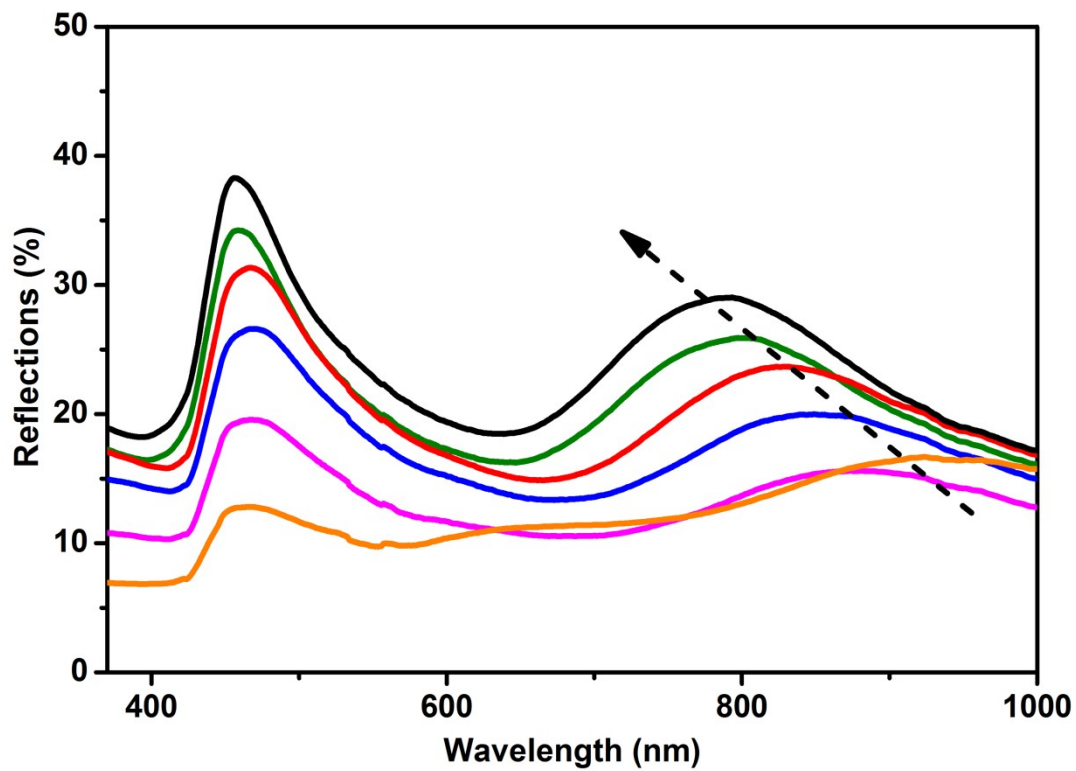


Fig. S6 Reflection spectra of the HMSSs-265/300 PC along with evaporation of iso-butanol.