

# Supporting Information

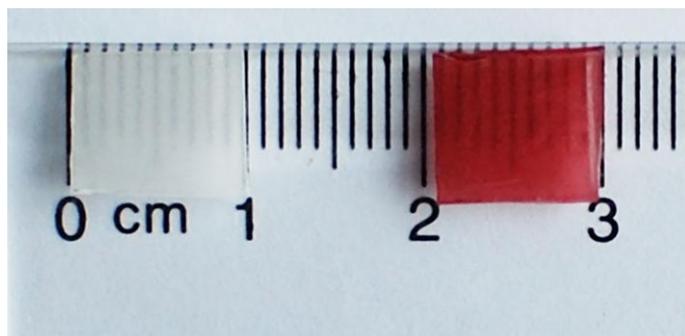
## **Dye-Modified Nanochannels of Highly C-oriented AFI Film for Heavy Metal Ions Sensing**

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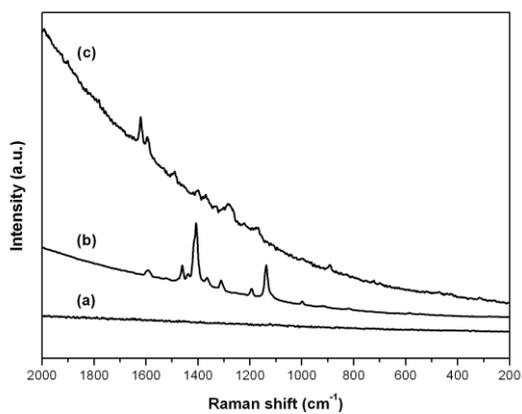
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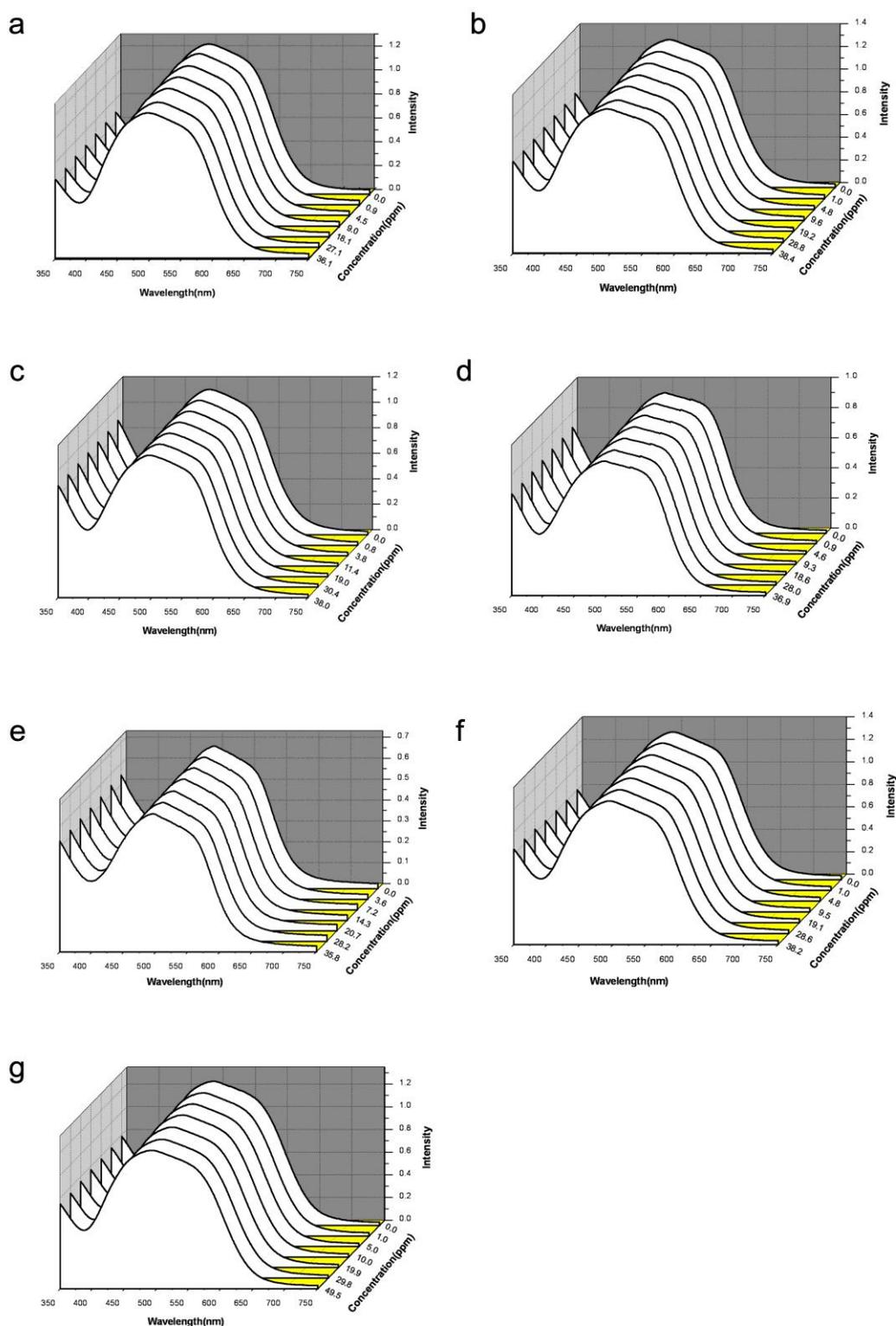
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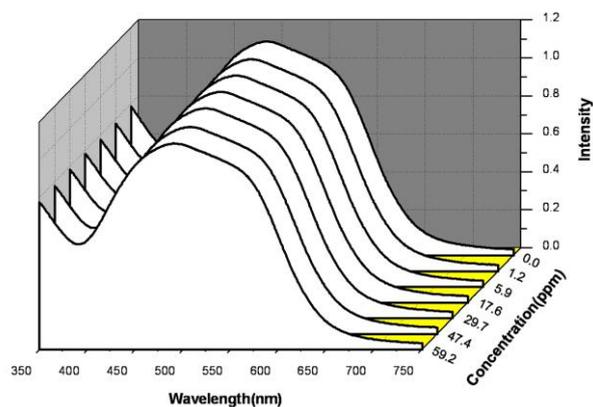
**Figure S1.** Digital image of the AFI film before (left) and after (right) loaded with DPPA molecules.



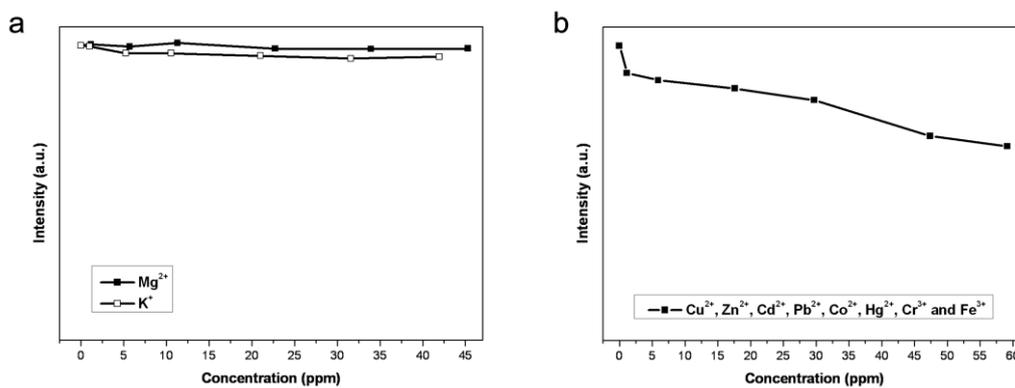
**Figure S2.** Raman spectra of (a) template-free SAPO-5 film, (b) DPPA and (c) DPPA-loaded SAPO-5 film.



**Figure S3.** UV absorption spectra of the DPPA-loaded SAPO-5 film after immersed in different concentrations of (a)  $\text{Cu}^{2+}$ , (b)  $\text{Co}^{2+}$ , (c)  $\text{Pb}^{2+}$ , (d)  $\text{Cd}^{2+}$ , (e)  $\text{Hg}^{2+}$ , (f)  $\text{Fe}^{3+}$  and (g)  $\text{Cr}^{3+}$  aqueous solutions at 495 nm.



**Figure S4.** UV absorption spectra of the DPPA-loaded SAPO-5 film after immersed in different concentrations of  $\text{Cu}^{2+}$ ,  $\text{Zn}^{2+}$ ,  $\text{Cd}^{2+}$ ,  $\text{Pb}^{2+}$ ,  $\text{Co}^{2+}$ ,  $\text{Hg}^{2+}$ ,  $\text{Cr}^{3+}$ ,  $\text{Fe}^{3+}$  mixed aqueous solutions at 495 nm.



**Figure S5.** UV absorption intensity as a function of concentration for (a)  $\text{Mg}^{2+}$  and  $\text{K}^{+}$ , (b) an equimolar mixture of  $\text{Cu}^{2+}$ ,  $\text{Zn}^{2+}$ ,  $\text{Cd}^{2+}$ ,  $\text{Pb}^{2+}$ ,  $\text{Co}^{2+}$ ,  $\text{Hg}^{2+}$ ,  $\text{Cr}^{3+}$  and  $\text{Fe}^{3+}$ .