

【 Electronic Supplementary Information】

Selective fluoride sensing using organic-inorganic hybrid nanomaterials containing anthraquinone

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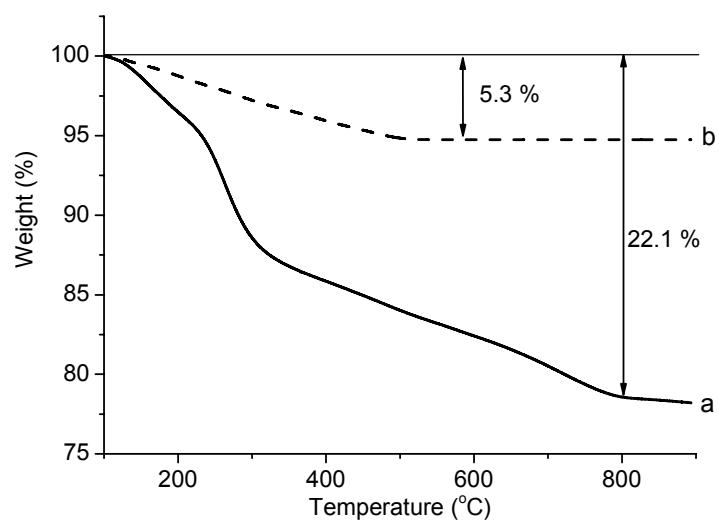


Fig. S1 Thermogravimetric analysis data of (a) **AFMS** and (b) **AFSP**.

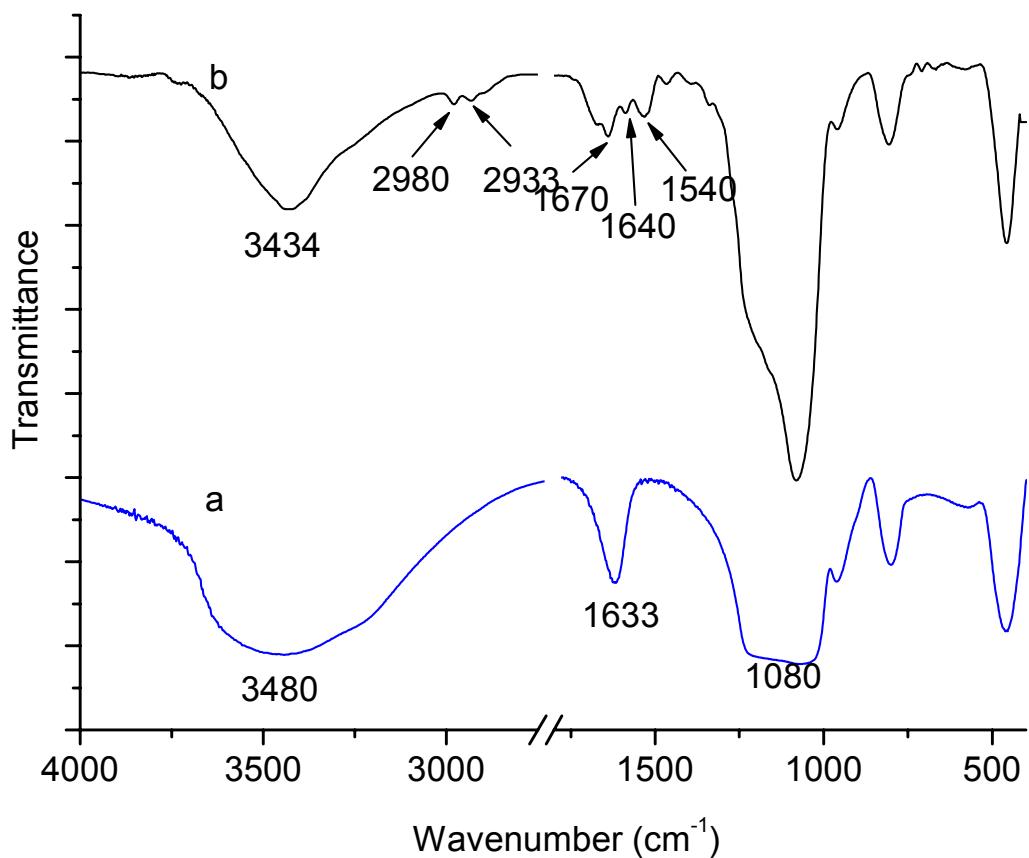


Fig. S2 IR spectra of (a) mesoporous silica and (b) AFMS.

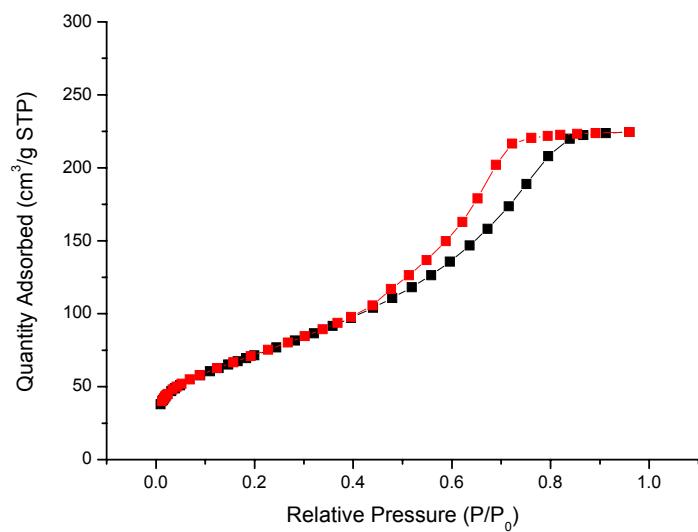


Fig. S3 The nitrogen adsorption-desorption isotherms of **AFSP**.

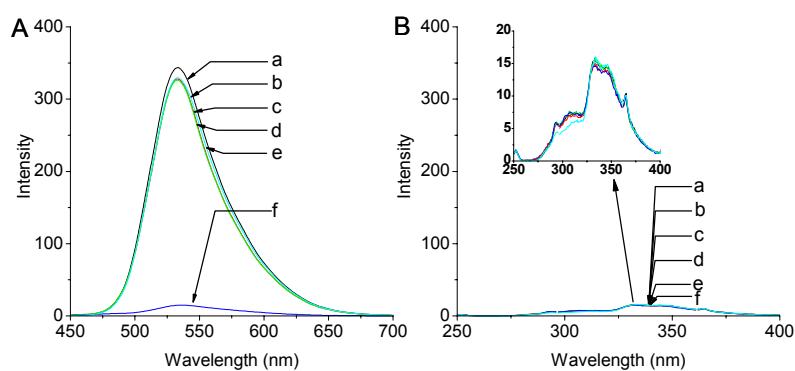


Fig. S4 Fluorescent spectra of (A) receptor 1 (0.2 mM) and (B) mesoporous silica (5.0 mg) by addition of tetrabutylammonium anions (20.0 equiv) in water: (a) none, (b) HSO_4^- , (c) Br^- , (d) Cl^- , (e) I^- and (f) F^- .

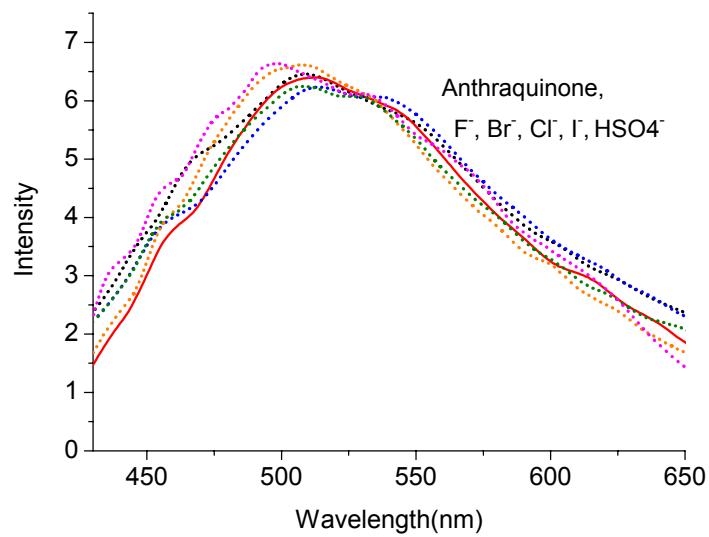


Fig. S5 Fluorescent spectra of anthraquinone (1.0×10^{-3} M) by the addition of anions (5.0 equiv) in acetonitrile.

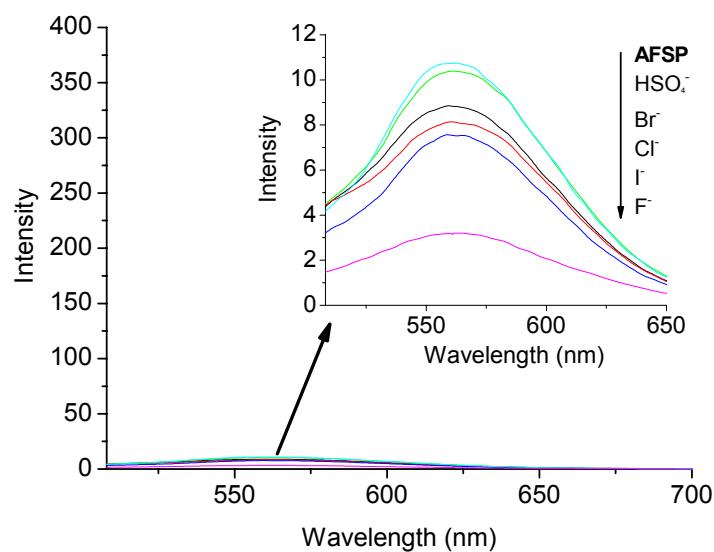


Fig. S6 Fluorescent spectra of AFSP (5.0 mg) by addition of tetrabutylammonium anions (20.0 equiv) in water.

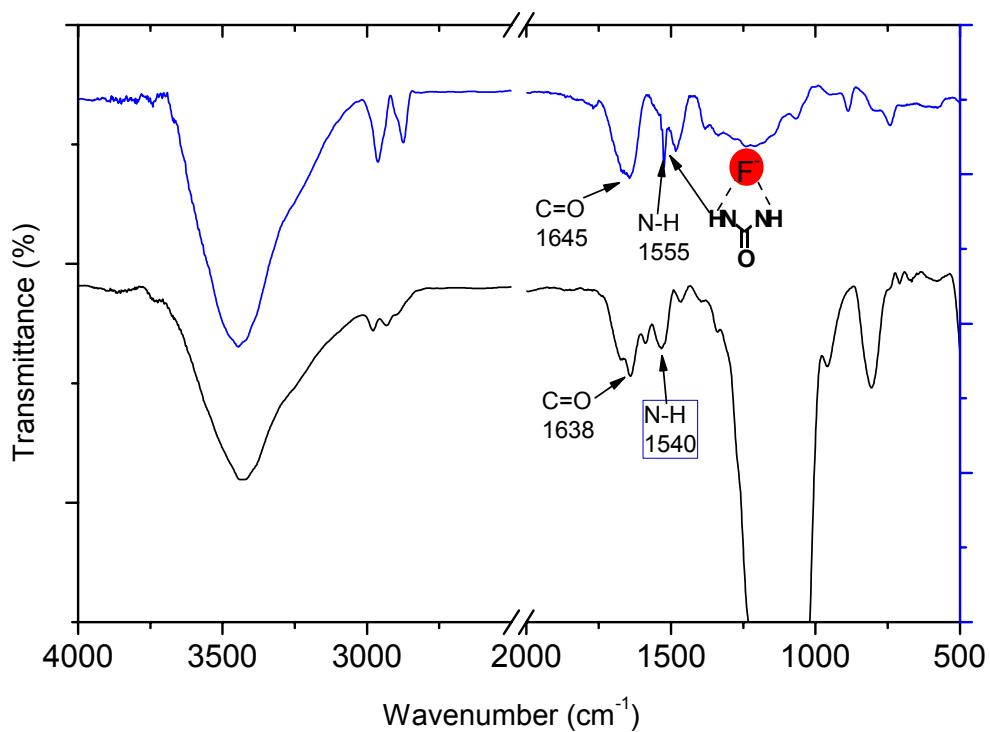


Fig. S7 IR spectra of (a) free-AFMS and (b) F⁻-loaded AFMS.

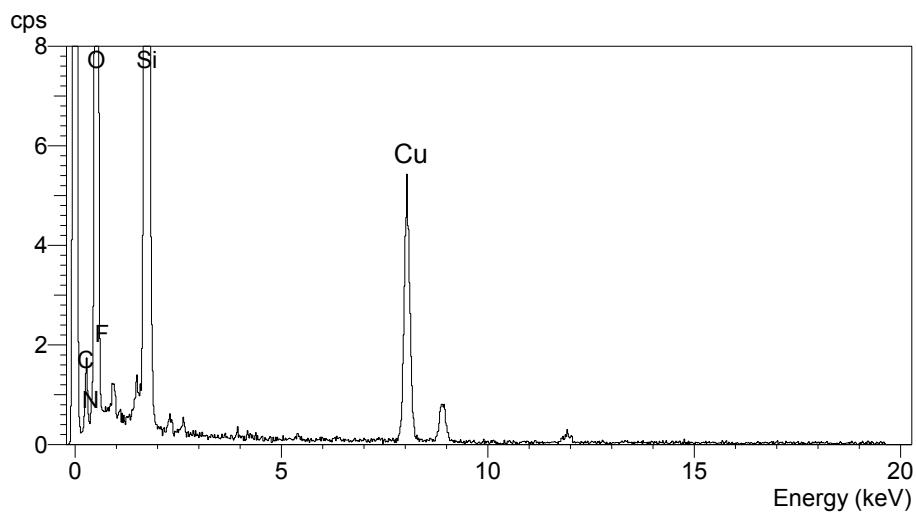


Fig. S8 EDX spectrum of F^- loaded **AFMS**.

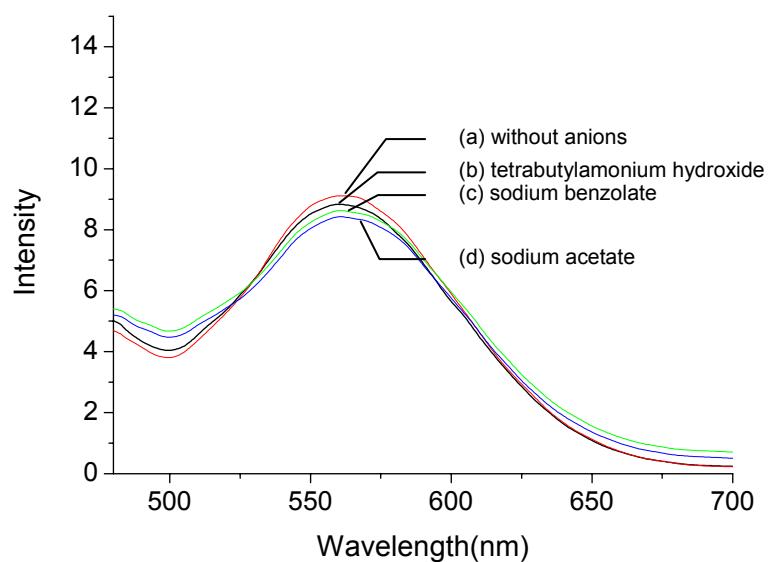


Fig. S9 Fluorescent spectra of **AFMS** (0.3 mg) by the addition of basic anions (5.0 equiv) in water.

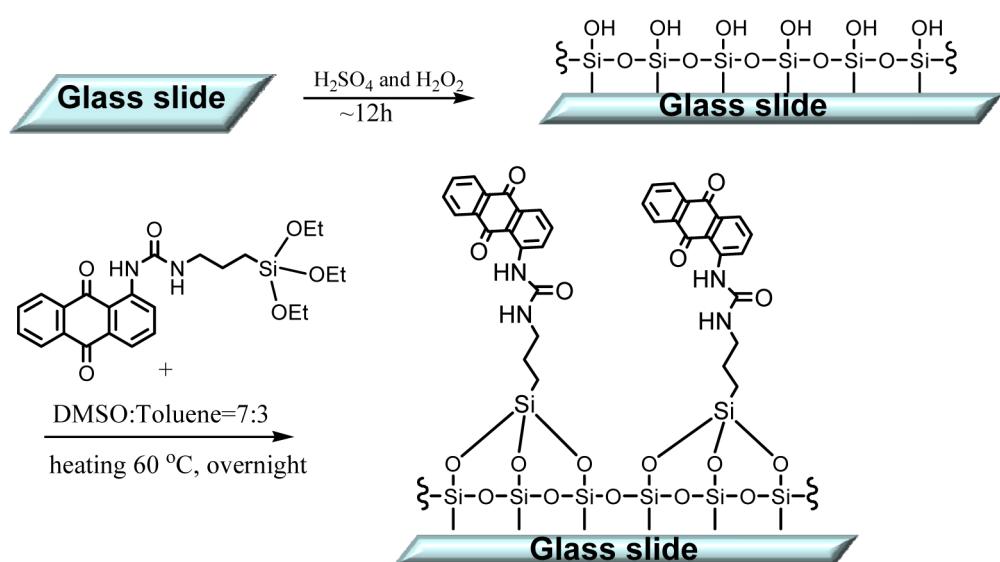


Fig. S10 Immobilization method of receptor **1** onto glass slide.

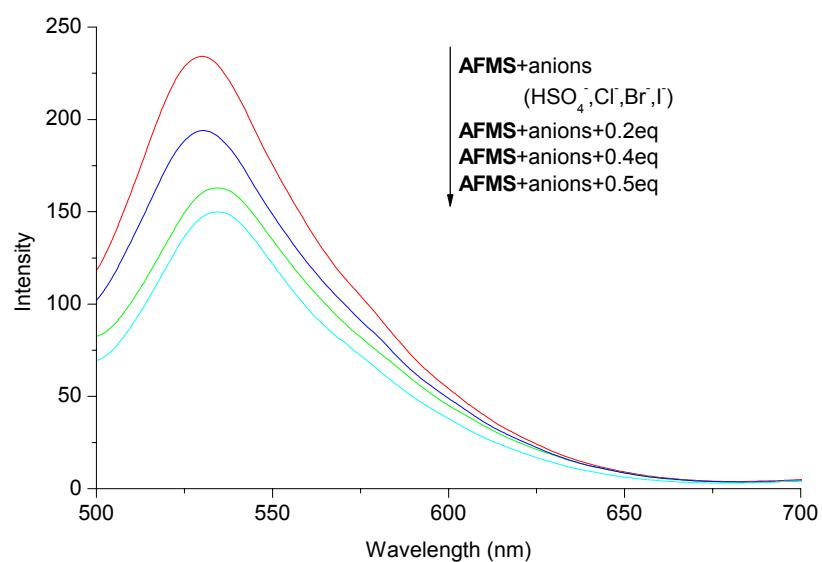


Fig. S11 Fluorescent spectra of **AFMS** by addition of tetrabutylammonium fluoride in the presence of other anions (20 equiv.) in water.

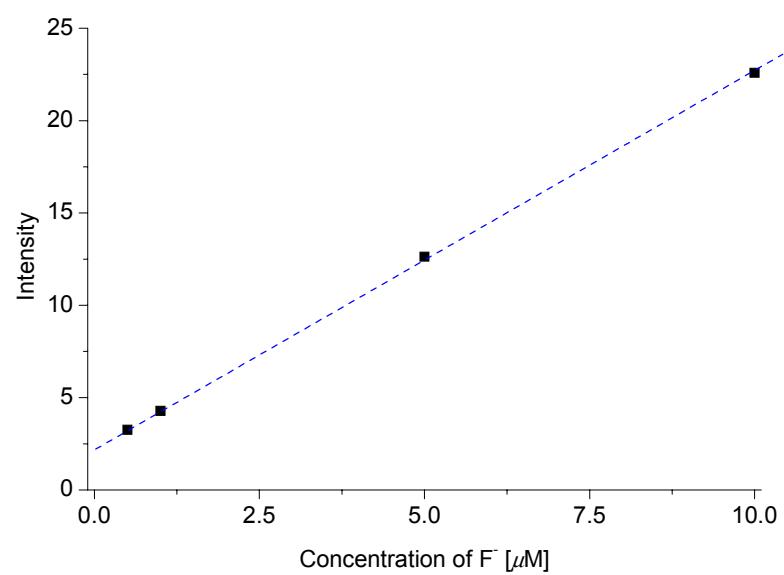


Fig. S12 Calibration curve of concentration of fluoride ion against intensity of AFMS.

Table S1 Fluorescence changes (I/I_0) of **AFMS** upon addition of various anions.

$\lambda_{\text{em}}(\text{nm})$	Fluorescence Change(I/I_0)				
	F^-	Cl^-	Br^-	I^-	HSO_4^-
450	0.37	0.88	0.91	0.88	0.91
Condition: AFMS (5.0 mg) in H_2O , excitation at 420 nm; anions, 20.0 equiv in H_2O . I_0 : fluorescence emission intensity of AFMS ; I : fluorescence emission intensity of AFMS in the presence of anions.					

Table S2 Fluorescence changes (I/I_0) of receptor **1** upon addition of various anions.

$\lambda_{\text{em}}(\text{nm})$	Fluorescence Change(I/I_0)				
	F^-	Cl^-	Br^-	I^-	HSO_4^-
425	0.04	0.95	0.96	0.97	0.96
Condition: receptor 1 , 0.2 mM in H_2O , excitation at 420 nm; anions, 20.0 equiv in H_2O . I_0 : fluorescence emission intensity of receptor 1 ; I : fluorescence emission intensity of receptor 1 in the presence of anions.					