

Supplementary Information

A simple nanoporous silica-based dual mode optical sensor for detection of multiple analytes (Fe^{3+} , Al^{3+} and CN^-) in water mimicking XOR logic gate

Jafar Afshani^a, Alireza Badiee^{a,b,*}, Negar Lashgari^a, Ghodsi Mohammadi Ziarani^c

^a School of Chemistry, College of Science, University of Tehran, Tehran, Iran

^b Nanobiomedicine Center of Excellence, Nanoscience and Nanotechnology Research Center, University of Tehran, Tehran, Iran

^c Department of Chemistry, Alzahra University, Tehran, Iran

Fig. S1 Thermogravimetric analysis of a) SNH, and b) SSA.

Fig. S2 FT-IR spectra of a) SBA-15, b) SNH, and c) SSA.

Fig. S3 Fluorescence emission of SSA (3 mL H_2O suspension, 0.2 g L^{-1}) upon addition of 100 μL of various metal-ions ($1 \times 10^{-2} \text{ M}$) including Al^{3+} , Fe^{3+} , Mn^{2+} , Mg^{2+} , Pb^{2+} , Hg^{2+} , Cr^{3+} , Na^+ , K^+ , Cd^{2+} , Ca^{2+} , Fe^{2+} , Ni^{2+} , Zn^{2+} , Co^{2+} , and Cu^{2+} .

Fig. S4 FT-IR spectra of SSA (a) and SSA + Al^{3+} complex (b).

Fig. S5 Fluorescence emission of SSA (3 mL H_2O suspension, 0.2 g L^{-1}) upon addition of 100 μL of various anions ($1 \times 10^{-2} \text{ M}$) including CN^- , F^- , Cl^- , Br^- , I^- , SO_4^{2-} , $\text{S}_2\text{O}_3^{2-}$, SCN^- , NO_2^- , NO_3^- , and CH_3CO_2^- .

* Corresponding author at: School of Chemistry, College of Science, University of Tehran, Tehran, Iran
Tel: +98 2161112614; fax: +98 2161112614
E-mail address: abadiei@khayam.ut.ac.ir (A. Badiei)

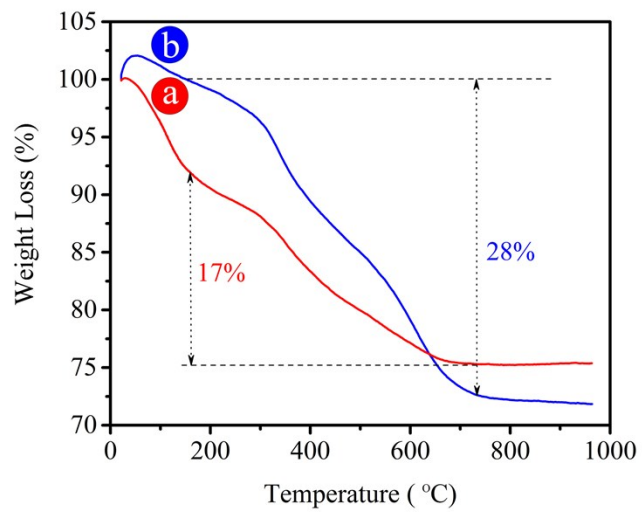


Fig. S1

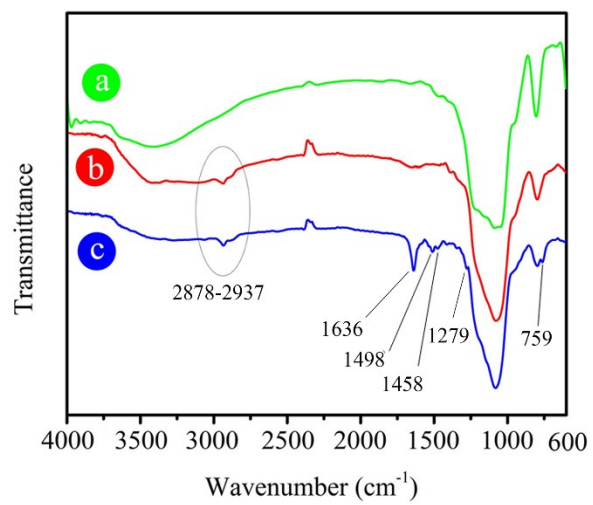


Fig. S2

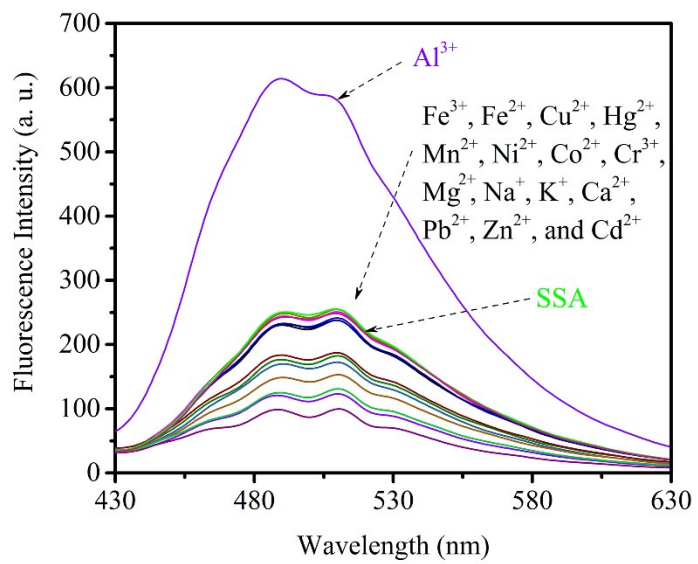


Fig. S3

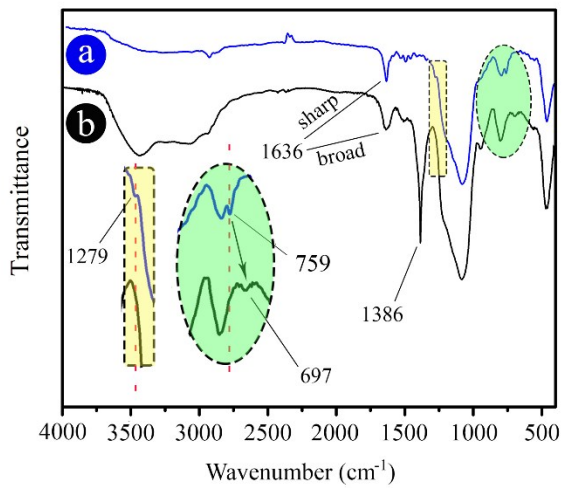


Fig. S4

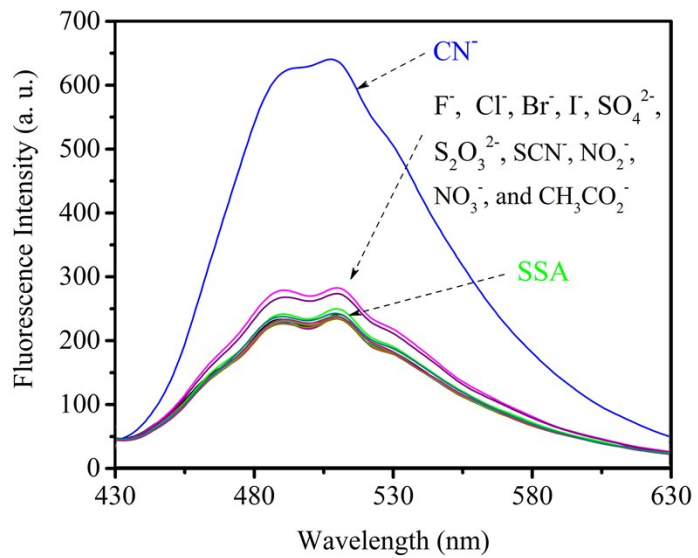


Fig. S5