

## Supporting Information

# Hybrid Nanoparticles Based Fluorescence Switch for Recognition of Ketoprofen in Aqueous medium

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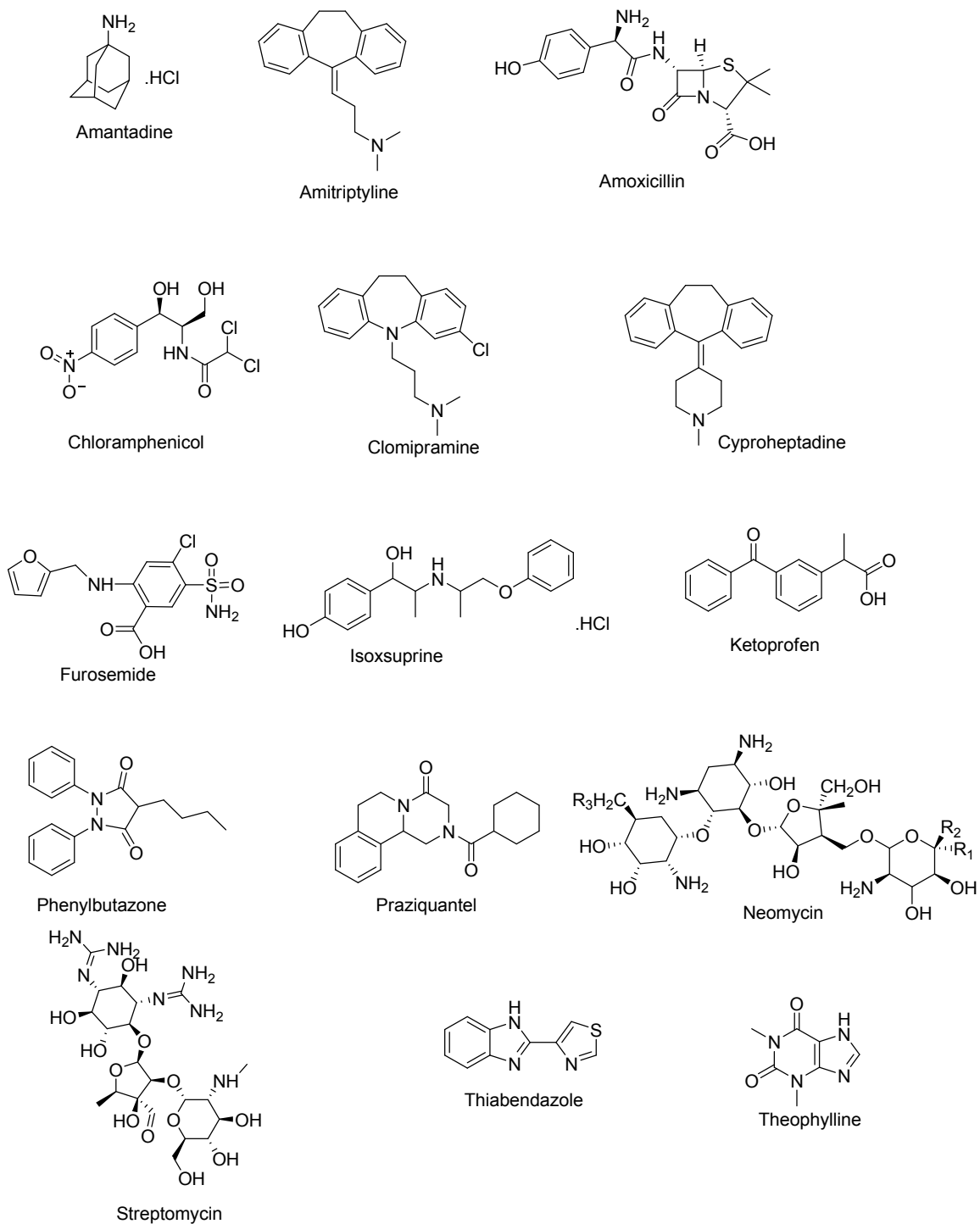
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**Figure S1:** Chemical structures of different drug molecules

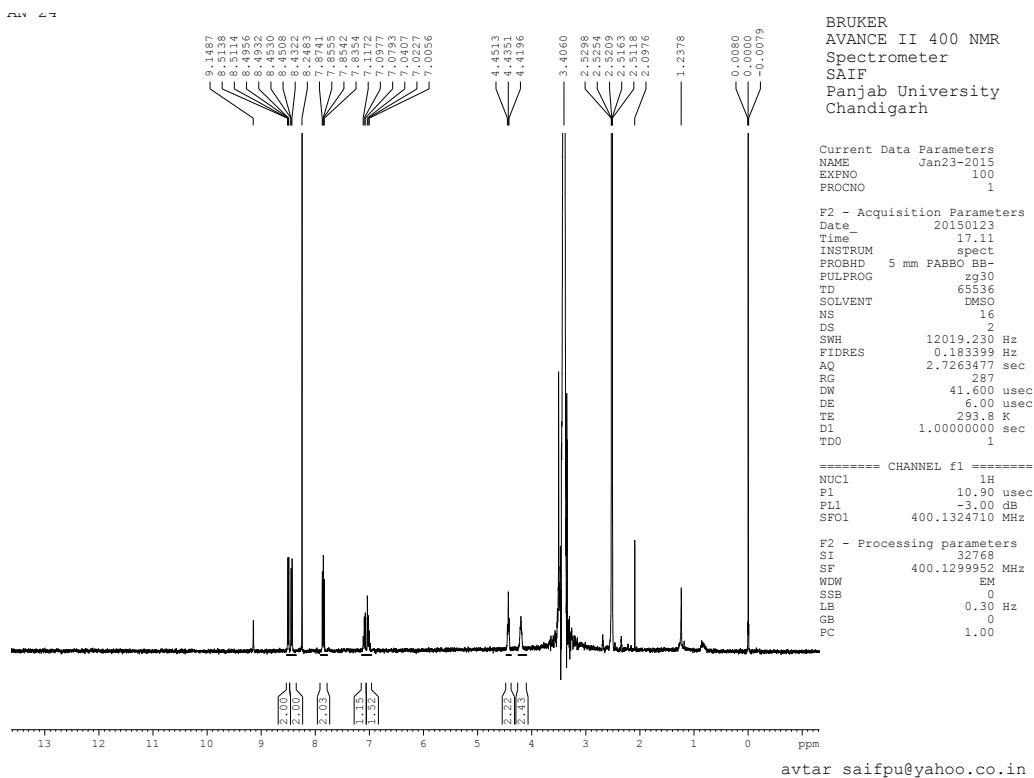


Figure S2: <sup>1</sup>H NMR Spectrum of Ligand 2

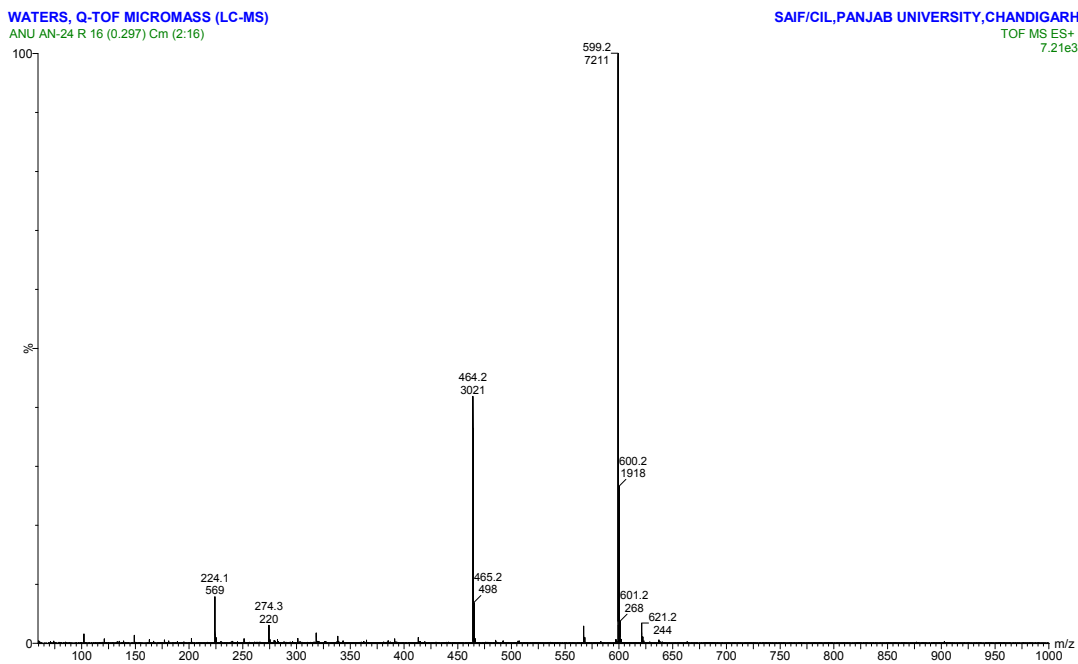
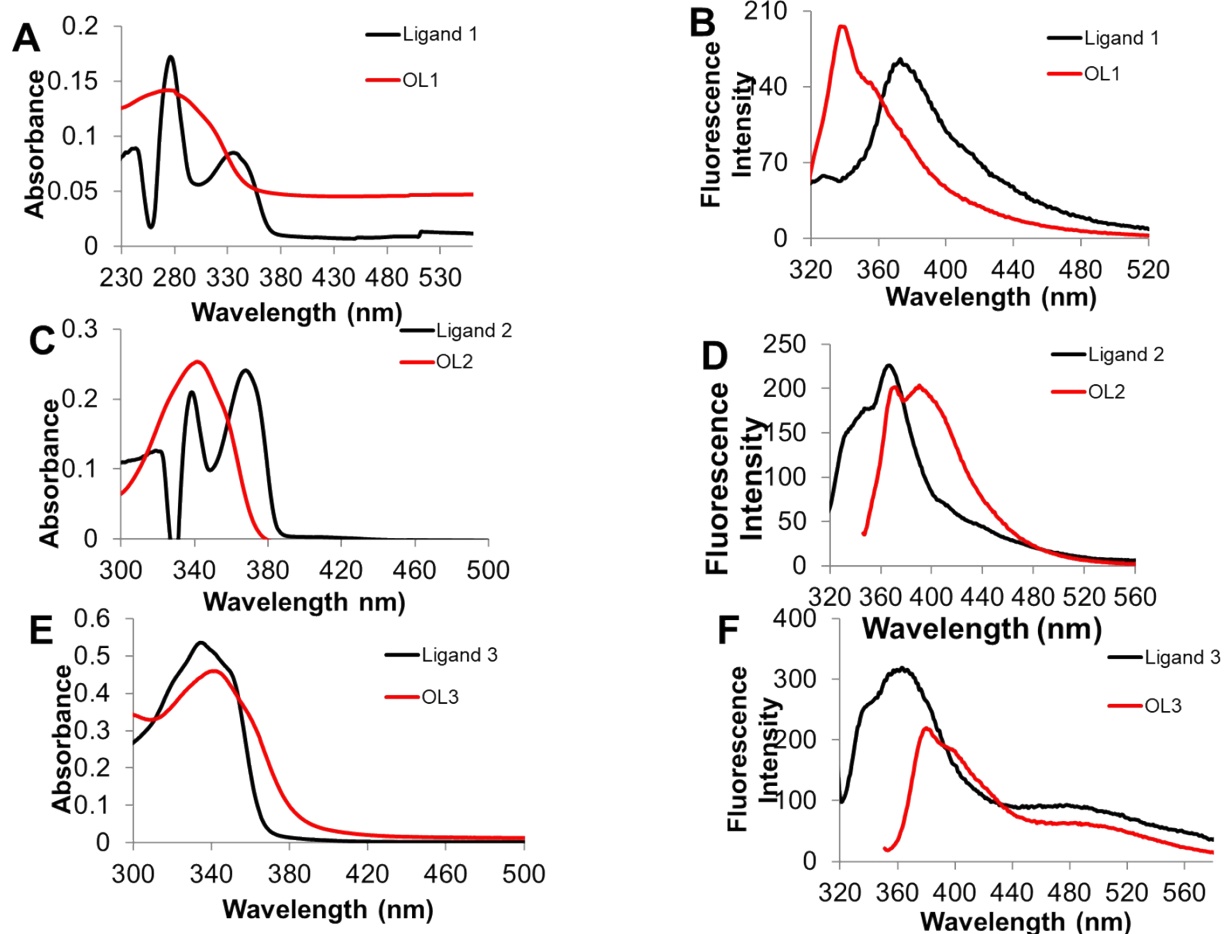
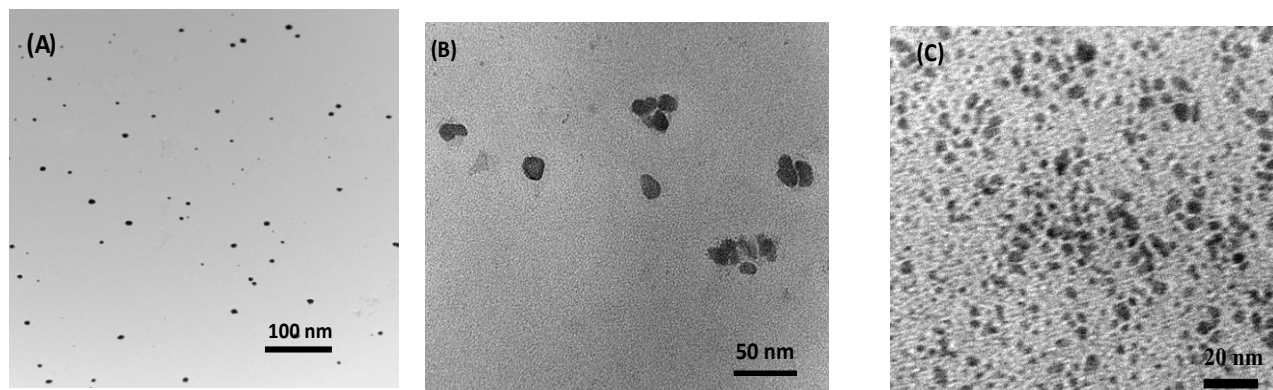


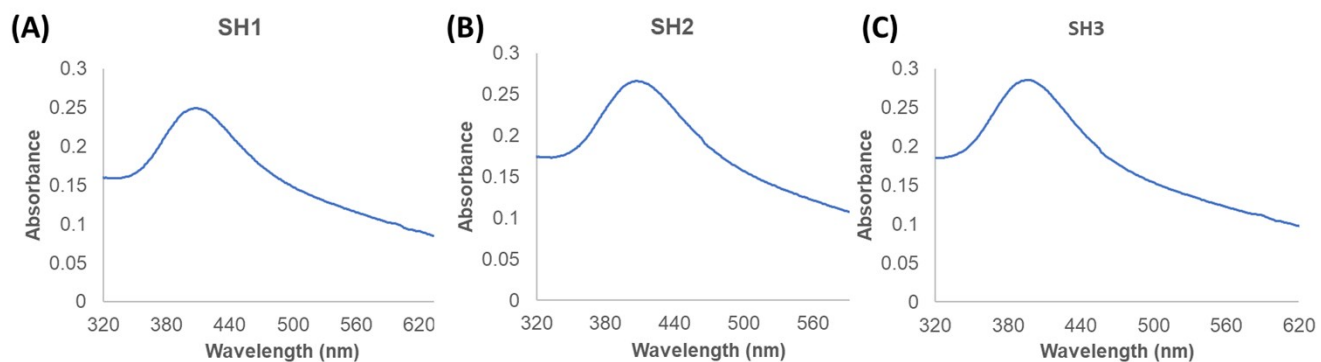
Figure S3: Mass Spectrum of Ligand 2



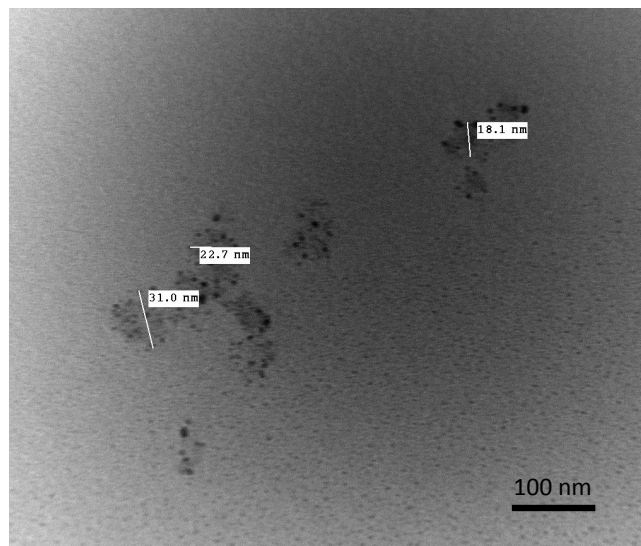
**Figure S4:** (A) UV-Vis absorption spectra for comparison of Ligand **1** and organic nanoparticles (**OL1**) ; (B) Fluorescence spectra for comparison of Ligand **1** and organic nanoparticles (**OL1**); (C) UV-Vis absorption spectra for comparison of Ligand **2** and organic nanoparticles (**OL2**) ; (D) Fluorescence spectra for comparison of Ligand **2** and organic nanoparticles (**OL2**); (E) UV-Vis absorption spectra for comparison of Ligand **3** and organic nanoparticles (**OL3**) ; (F) Fluorescence spectra for comparison of Ligand **3** and organic nanoparticles (**OL3**).



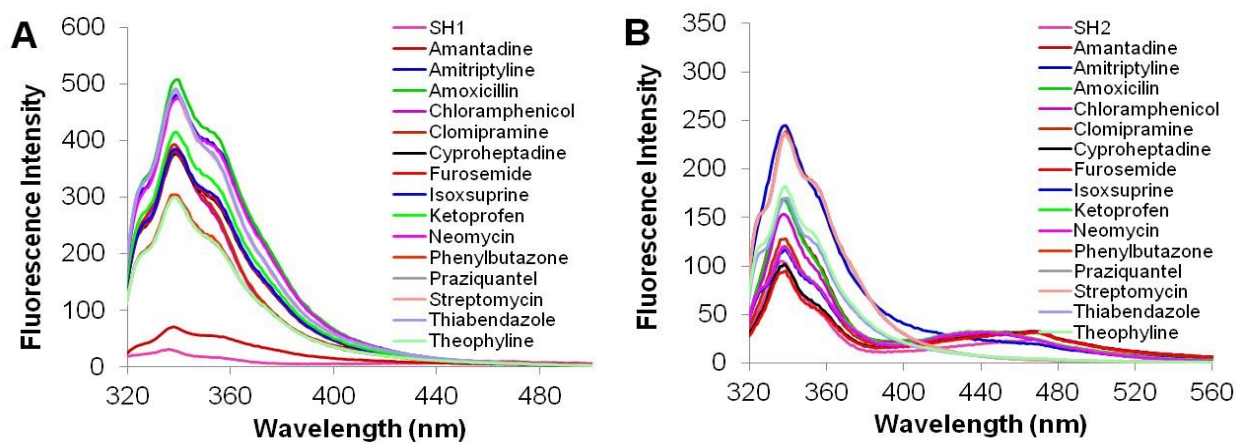
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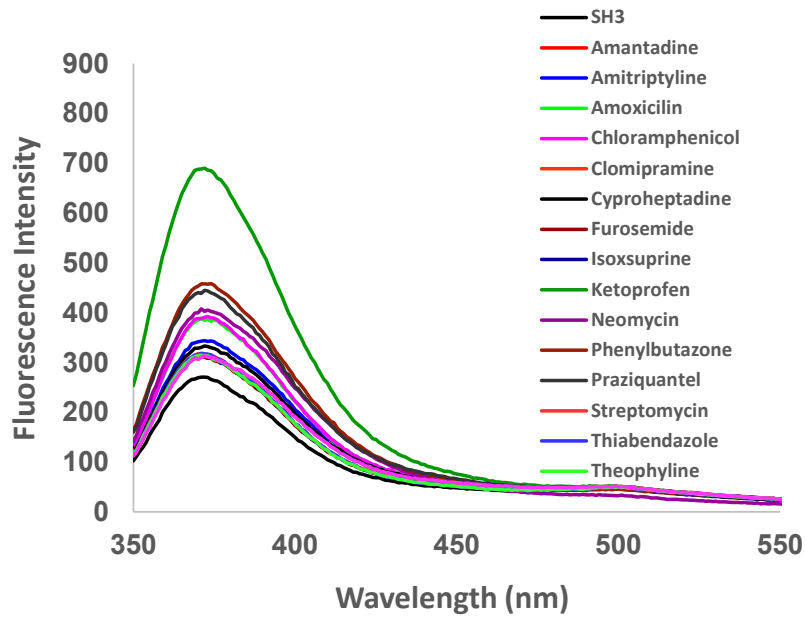
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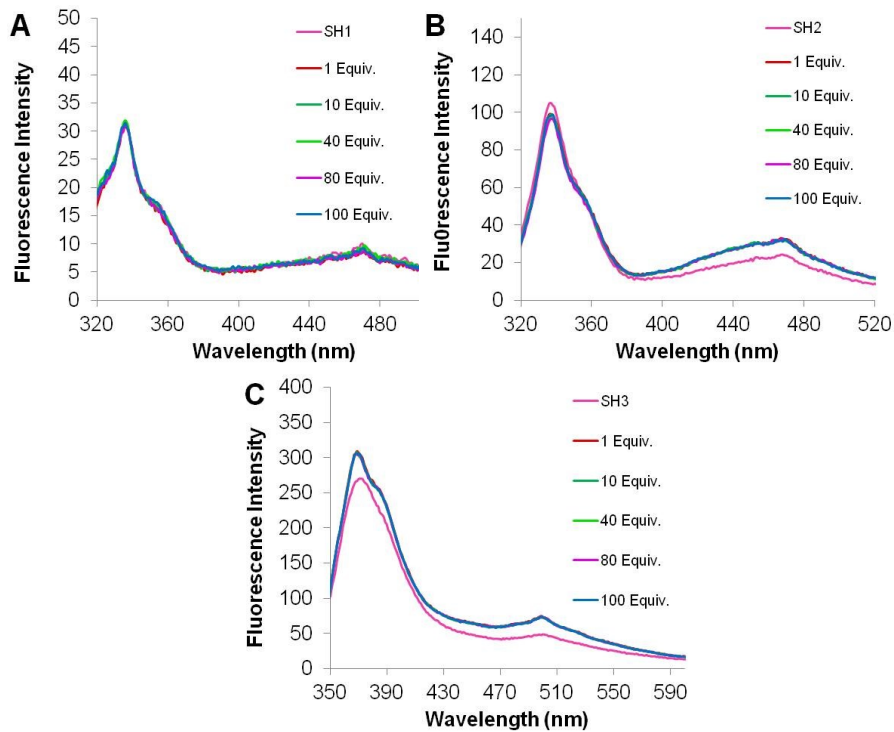
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**Figure S8:** (A) Emission profile of **SH1** upon addition of 20  $\mu\text{M}$  of different drug molecules; (B) Emission profile of **SH2** upon addition of 20  $\mu\text{M}$  of different drug molecules

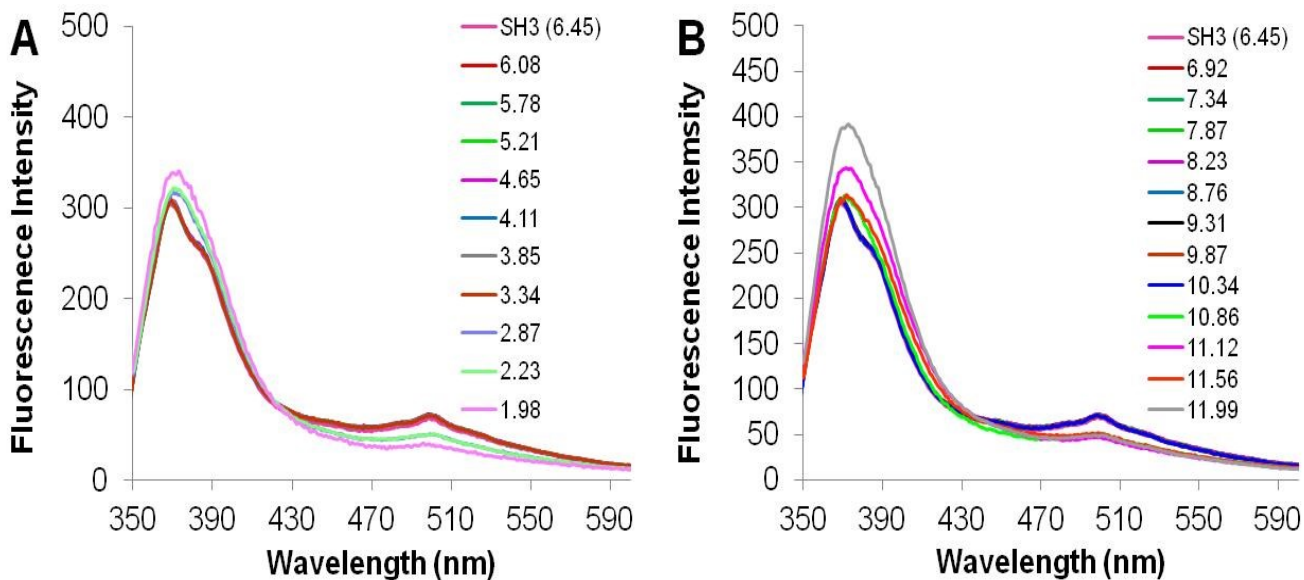


**Figure S9:** Fluorescence profile of SH3 upon addition of 20  $\mu\text{M}$  of different drug molecules in PBS buffer.

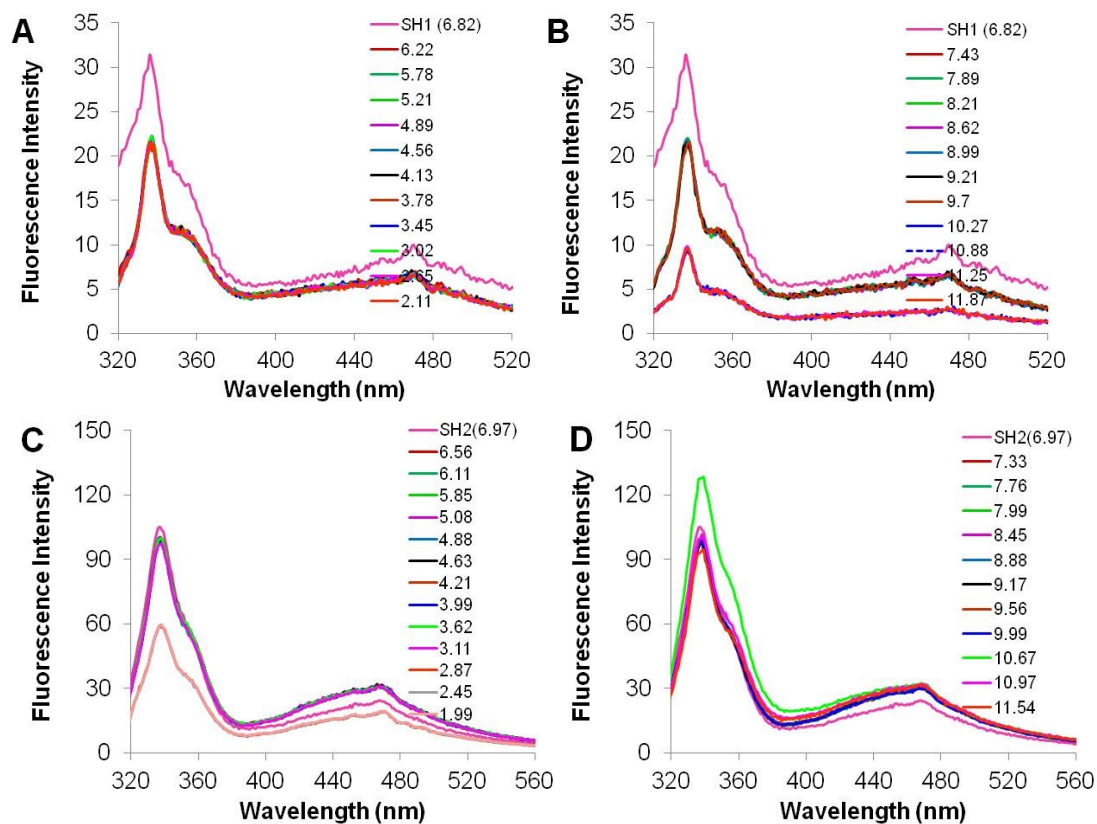




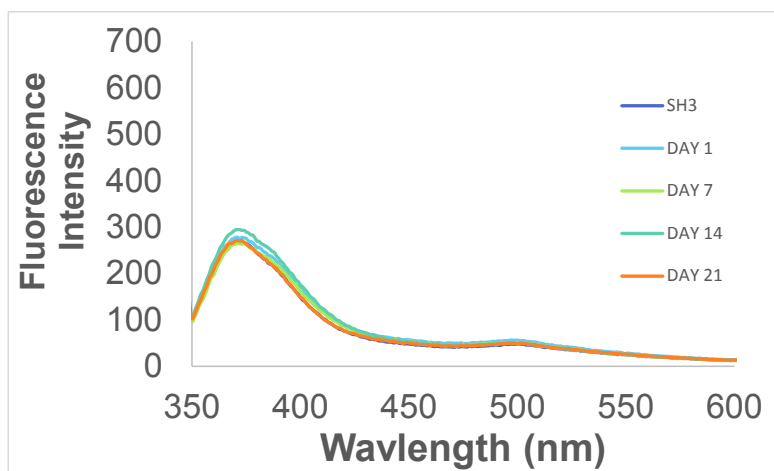
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**Figure S13:** Fluorescence emission profile of **SH3** observed on Day 1, Day 7, Day 14 and Day 21.

**Table S1: A comparison of literature reported sensors with the present work**

S.No	Name of Paper Title	Medium of studies	Detection Limit	Detection Range	Mode of Detection	References
1	Sensitive determination of ketoprofen using flow injection with chemiluminescence detection	KMnO <sub>4</sub> and Na <sub>2</sub> SO <sub>3</sub>	2.0×10 <sup>-8</sup> mol/L	5.0×10 <sup>-8</sup> - 3.0×10 <sup>-6</sup> mol/L	Chemiluminescence method	1
2.	A validated method development for ketoprofen by a flow-injection analysis with UV-detection and its application to pharmaceutical formulations	Aqueous solution of ethanol (10%, v/v)	3 µg mL <sup>-1</sup>	1.6×10 <sup>-6</sup> - 1.7×10 <sup>-4</sup> M	Flow-injection analysis method with UV-detection	2
3	Determination of ketoprofen based on its quenching effect in the fluorescence of quantum dots	300 mM NaH <sub>2</sub> PO <sub>4</sub> /NaOH buffer	2.3 mg/mL	7.5-100 mg/mL	Fluorometric determination.	3
4.	Spectrophotometric determination of ketoprofen and its application in pharmaceutical analysis	Toluene	0.037 µg×mL <sup>-1</sup>	0.8-16.0 µg×mL <sup>-1</sup>	Spectrophotometric determination	4
5.	On-line solvent recycling: a tool for the development of clean analytical chemistry in flow injection Fourier transform infrared spectrometry. Determination of ketoprofen	CCl <sub>4</sub>	0.04 mg ml <sup>-1</sup>	up to 10 mg ml <sup>-1</sup>	Flow injection Fourier transform infrared spectrometry.	5
6.	Quantitative determination of ketoprofen in gels and ampules by using flow-injection UV spectrophotometry and HPLC	Phosphate buffer (pH 2.2, 0.01 M): acetonitrile, 60:40, v/v	0.44 µg/mL	7.5-75 µg/mL	FI-UV spectrophotometric method	6

7.	Simultaneous determination of naproxen, ketoprofen and phenol red in samples from rat intestinal permeability studies: HPLC method development and validation.	Mobile phase consists of mixture of 20% methanol, 28% of acetonitrile, 52% water and 0.4 ml triethylamine (adjusted to pH 3.2 using orthophosphoric acid)	-----	15.6–250 µg/ml	Reverse-phase high performance liquid chromatographic method with UV detection	7
8.	Simultaneous HPLC determination of ketoprofen and its degradation products in the presence of preservatives in pharmaceuticals	The optimal mobile phase was a mixture of acetonitrile, water and phosphate buffer pH 3.5 (40:58:2, v/v/v).	-----	----- --	High-performance liquid chromatography (HPLC) method with UV spectrophotometric detection	8
9.	Determination of flunixin and ketoprofen in milk by liquid chromatography–tandem mass spectrometry	Water–acetonitrile (50/50 (v/v)) containing 0.1% formic acid	1 µg kg <sup>-1</sup>	-----	Liquid chromatography–tandem mass spectrometry	9
10.	Hybrid Nanoparticles Based Fluorescence Switch for Recognition of Ketoprofen in Aqueous medium <b>(Present Work)</b>	Aqueous Medium	34 nM	0-25 µM	Fluorescence Spectrophotometer	----

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