

## Electronic Supplementary Information

# Deprotonation of –NH Proton from Pyrrole Moiety Enables Concentration Dependent Colorimetric and Fluorescence Quenching of Silver (I) ions

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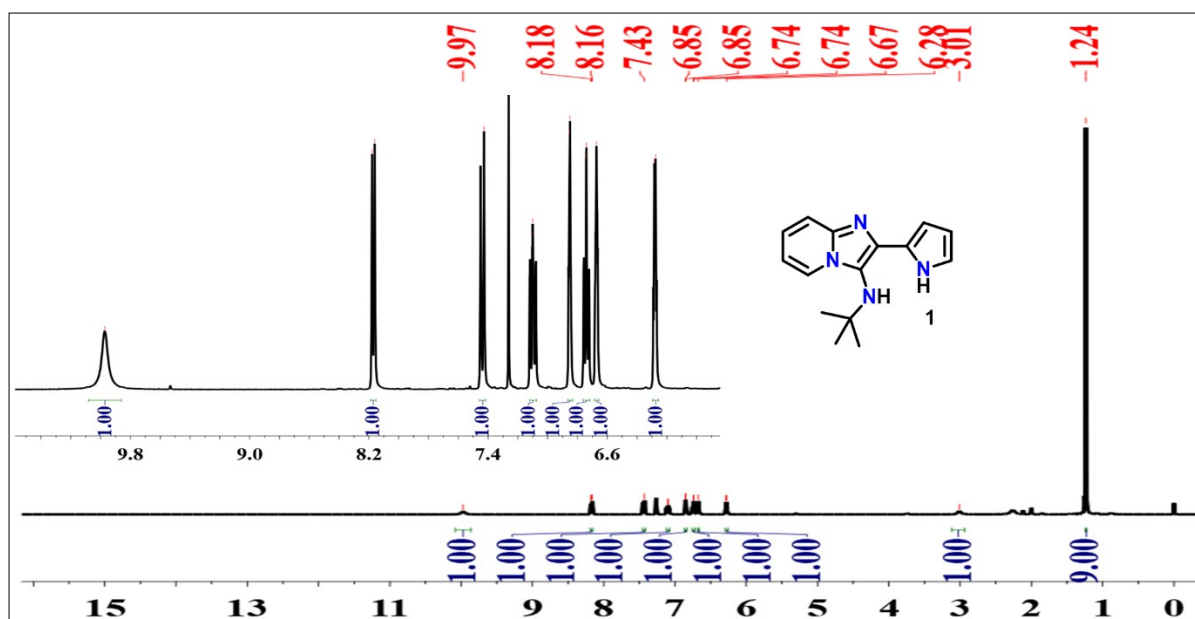
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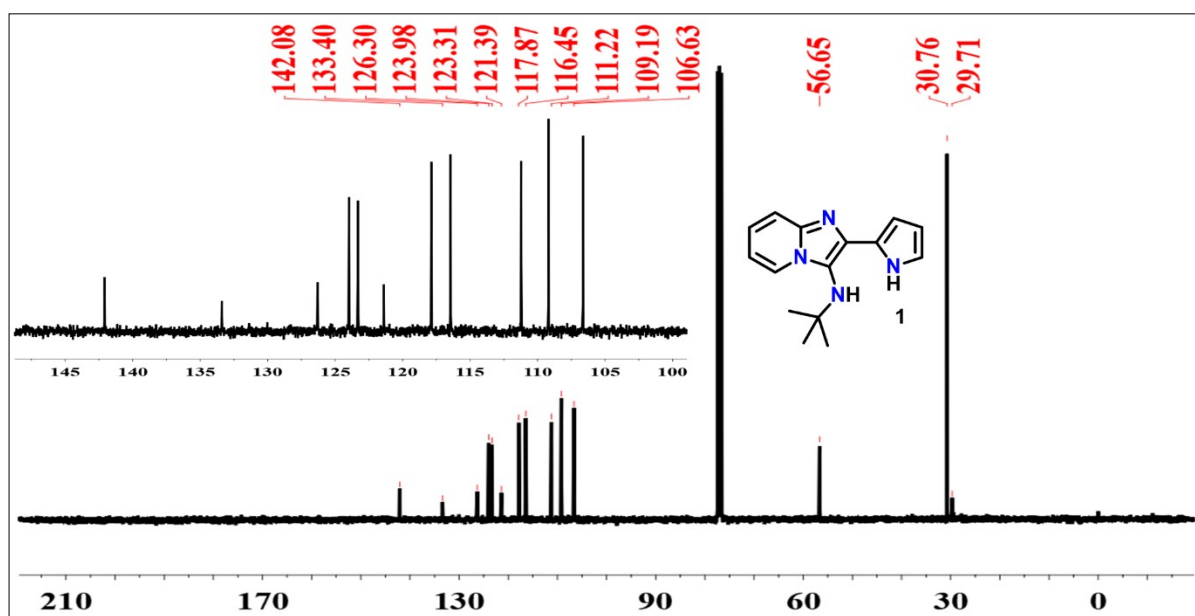
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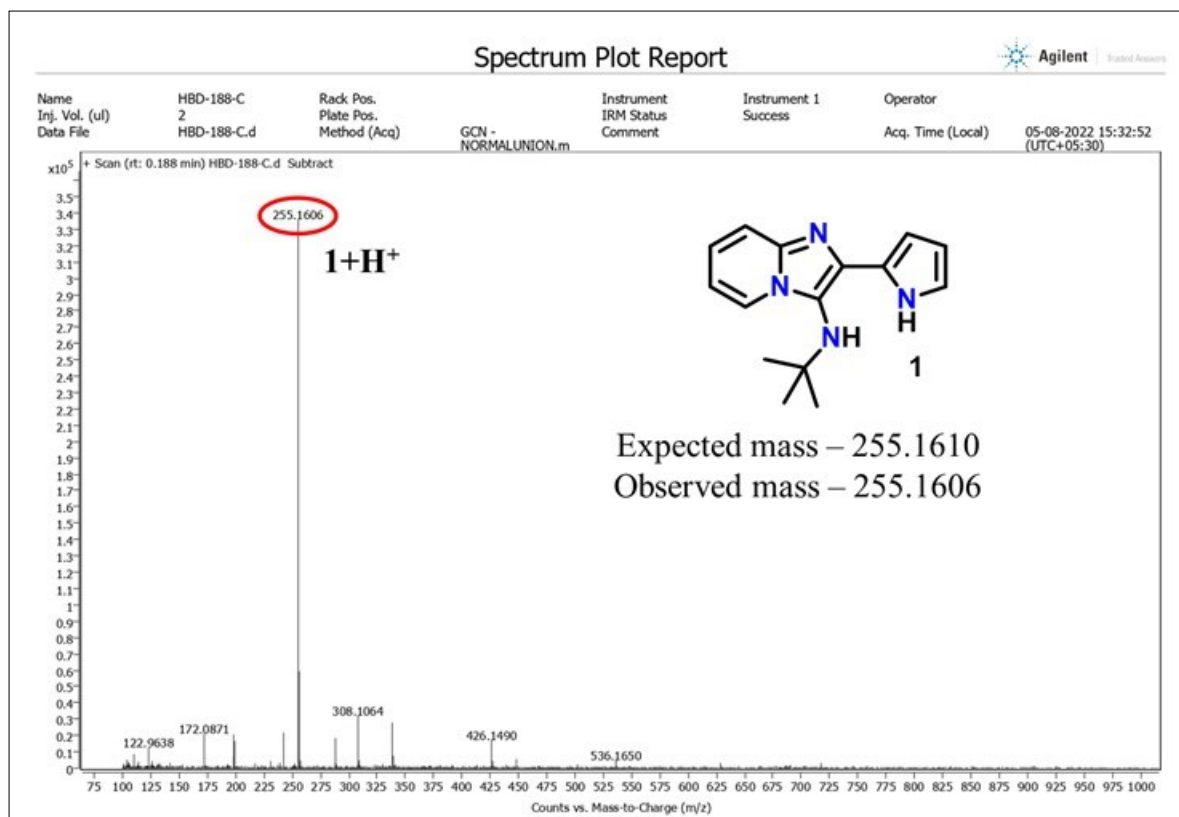


**Figure S1.**  $^1\text{H}$  NMR spectra of ligand (**1**) in  $\text{CDCl}_3$ .

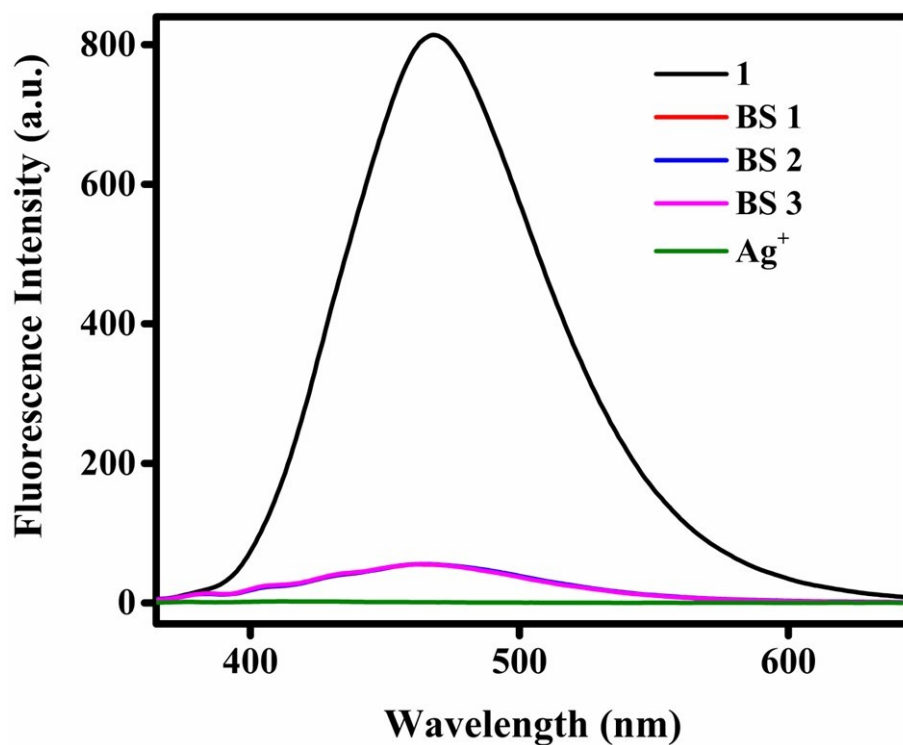


**Figure S2.**  $^{13}\text{C}$  NMR spectra of ligand (**1**) in  $\text{CDCl}_3$ .

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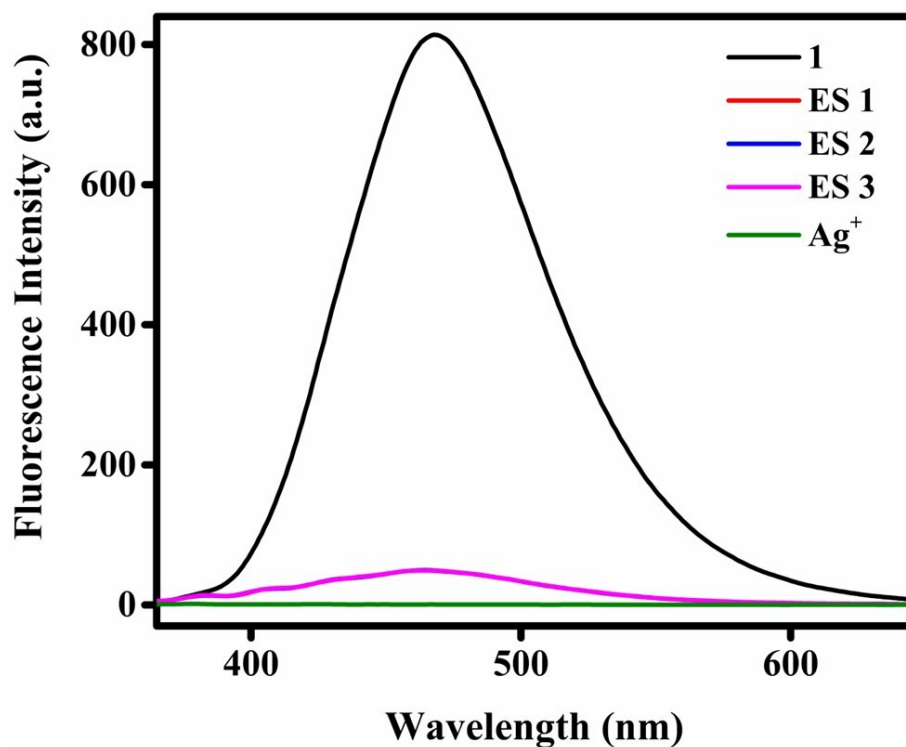


**Figure S3.** HRMS spectra of ligand (1) in CH<sub>3</sub>CN.

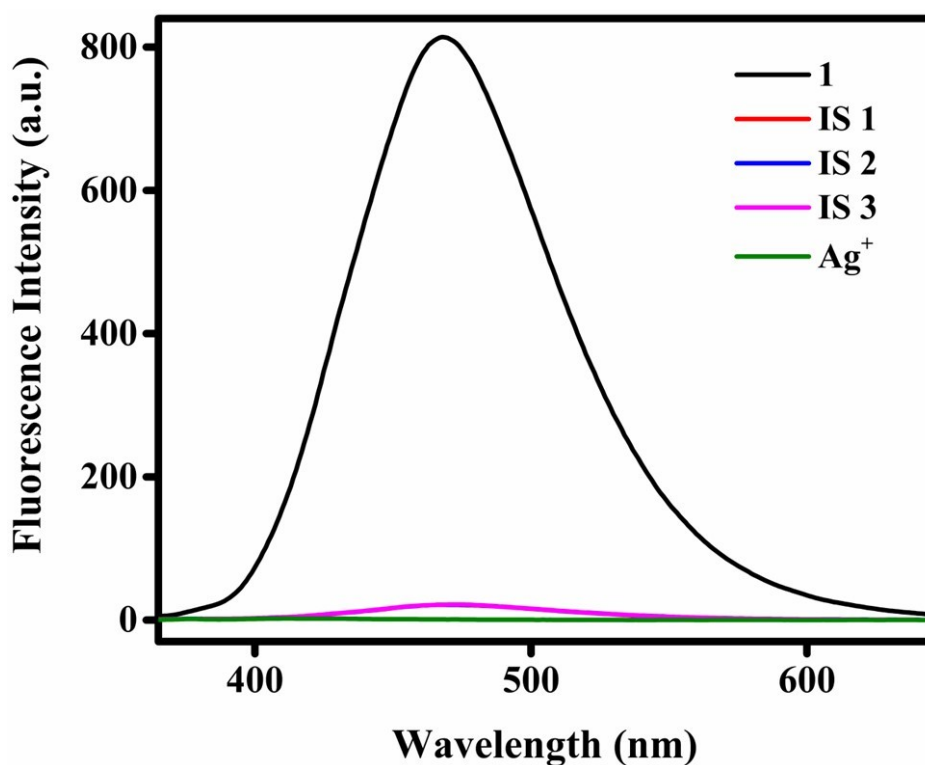


**Figure S4** Steady state fluorescence of ligand (1) 5.07  $\mu$ M and its spiked samples containing biological sample (BS).

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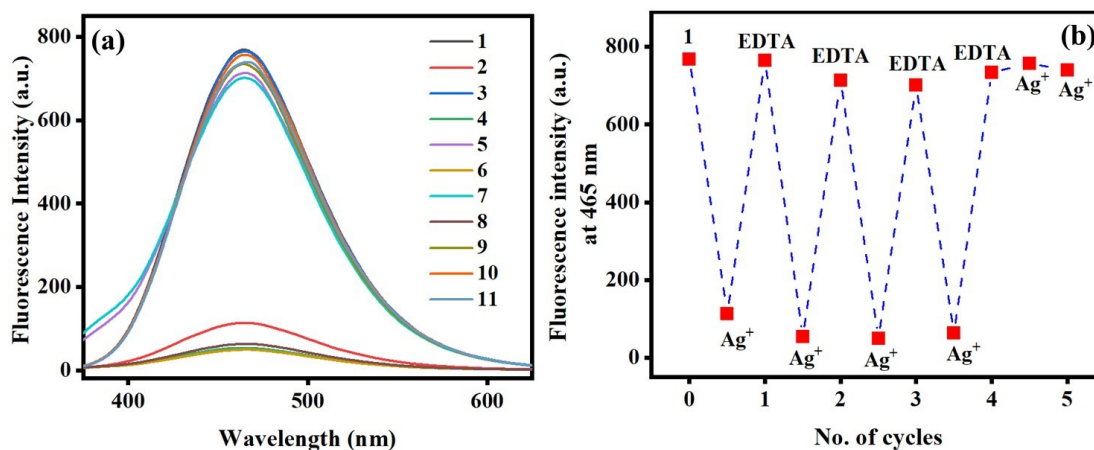


**Figure S5:** Steady state fluorescence of ligand (1) 5.07 μM and its spiked samples containing environmental sample (ES).

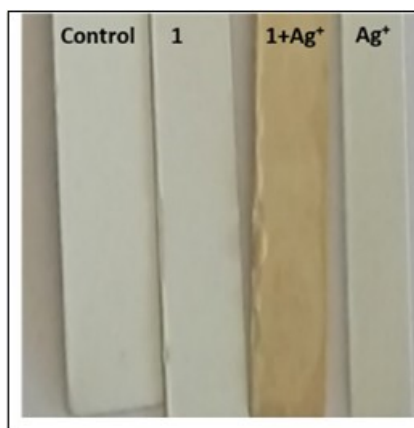


**Figure S6:** Steady state fluorescence of ligand (1) 5.07 μM and its spiked samples containing industrial sample (IS).

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**Figure S7:** Fluorescence emission response of **1** with successive additions of Ag<sup>+</sup> and EDTA.



**Figure S8:** Ligand (**1**)-coated silica plates as a tool for *point-of-care-testing* devices prompting naked-eye detection showing the color change in the ligand (**1**) upon interaction with Ag<sup>+</sup> ions under sunlight.

**Table S1:** Comparison of limit of detection, binding constant, stoichiometry, and applications of ligand (**1**) with similar data reported for other chemosensors.

Name	1/2	LOD	K <sub>a</sub>	Stoichiometry Ligand:metal	Applications
1-Benzylidenethiosemicarbazide	2	0.2 μM		1:1	Water samples [1]
Thiosemicarbazide	2	6.13 nM		1:2	Test strips, Water samples, Imaging MCF7 cells [2]
Isocyanate naphthalene based derivative	2	2.87 nM		1:2	Real sample analysis, Test strips and Bioimaging [3]

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Semicarbazone based Schiff base	2	7.7 $\mu\text{M}$			Water samples [4]
Thiosemicarbazone based Schiff base	1	2.2 $\mu\text{M}$	$2.8 \times 10^9 \text{ M}^2$	1:2	Real sample analysis [5]
	2	1.6 $\mu\text{M}$			
Carbazole-Rhodanine based derivative	2	12.8 nM	$3.8 \times 10^4 \text{ M}^{-1}$	1:1	Imaging HeLa cells [6]
Octapamine based Schiff base	2	1.49 $\mu\text{M}$	$7.00 \times 10^4$	1:1	NR [7]
Thiourea derivative	2	$8 \times 10^{-7} \text{ M}$	$1.8 \times 10^8 \text{ M}^{-2}$	1:2	NR [8]
p-aminobenzoic acid and p-aminophenol based carbon dots	2	1.4 $\mu\text{M}$	NR	NR	Real sample analysis [9]
<b>1</b>	1	3.08 nM	$1.73 \times 10^6 \text{ M}^{-1}$	2:1	Test strips, water analysis, and imaging of onion epidermal cells ( <b>this work</b> )
	2	0.57 nM	$1.73 \times 10^6 \text{ M}^{-1}$		

1=UV and 2=fluorescence method, NR=not reported

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