

An easy-to-synthesize ‘turn-on’ fluorescent sensor for the selective detection of Hg^{II}

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Experimental Section

Materials and Instrumentation: Chemicals and reagents were purchased from commercial suppliers and used without further purification. UV/Vis absorption spectra were recorded with a Hitachi U3500 spectrometer. Fluorescence spectra were obtained with a Hitachi F-4500 spectrometer.

Compound 1. After being dissolved in little ethanol, *p*-phenylenediamine (0.454 g, 4.2 mmol) was added dropwise to a solution of 4-(diethylamino)benzaldehyde (1.5 g, 8.4 mmol) in anhydrous alcohol (50 mL). The reaction mixture was stirred at 80 °C for 3 h. The solvent was evaporated after cooling down to room temperature, and the obtained crude product was purified by recrystallization. Compound **1** was obtained as a brown solid. Yield 1.56 g (87 %). Mp 212 °C. ¹H NMR (300 MHz, CDCl₃) δ: 8.34 (2 H, s, HC); 7.76 (4 H, d, *J* 3.90, HB); 7.3 (4 H, d, *J* 8.04, HD); 6.71 (4 H, d, *J* 5.28, HA); 3.45 (8 H, q, NCH₂); 1.22 (12 H, t, CH₃). Found (%): C, 78.60; H, 8.15; N, 13.27. Calc. for C₂₈H₃₄N₄ (427.5) (%): C, 78.83; H, 8.03; N, 13.13.

Compound 2: Compound **2** was synthesized by a procedure similar to that used for **1** and obtained as a light yellow solid. Yield 88 %. Mp 142 °C. ¹H NMR (300 MHz, CDCl₃) δ: 7.33 (s, 4 H), 7.48-7.51 (m, 6 H), 7.93-7.95 (m, 4 H), 8.63 (s, 2 H). Found (%): C, 84.36; H, 5.35; N, 9.90. Calc. for C₂₀H₁₆N₂ (284.15) (%): C, 84.48; H, 5.67; N, 9.85.

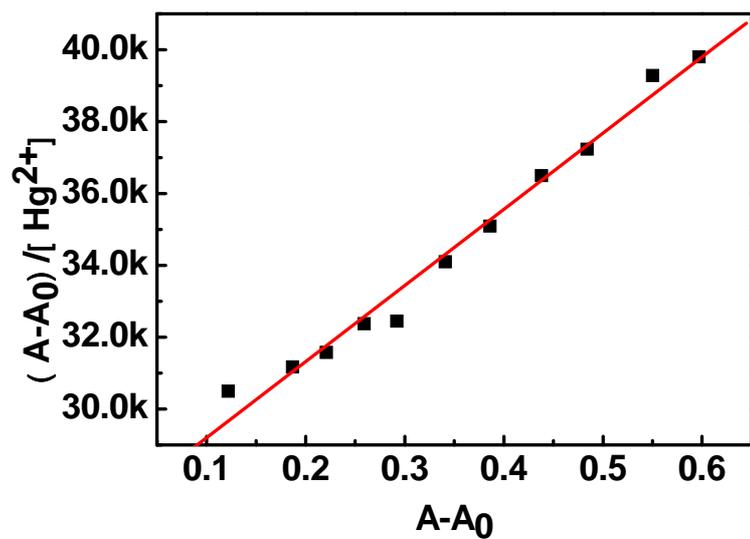


Figure S1 Job's method curve.

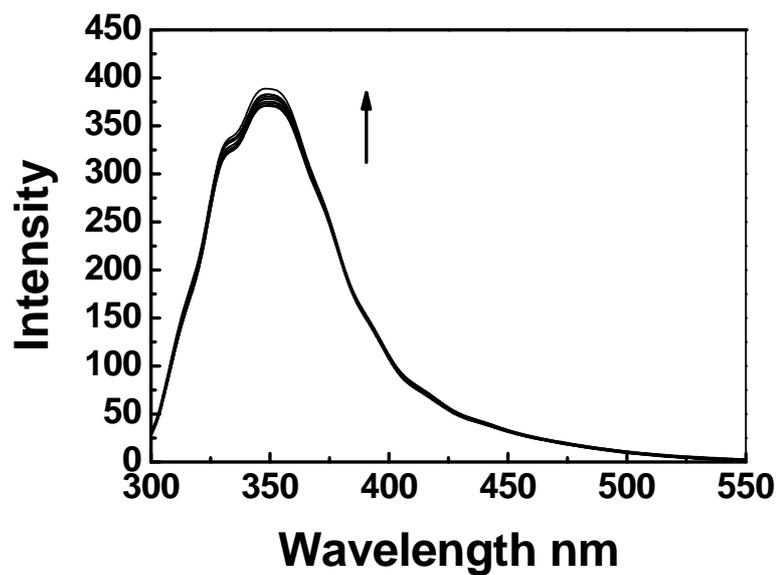


Figure S2 Fluorescence response of **2** ($10 \mu M$) in MeCN/H₂O (9:1 v/v) solution upon addition of Hg^{2+} (0-2equiv).

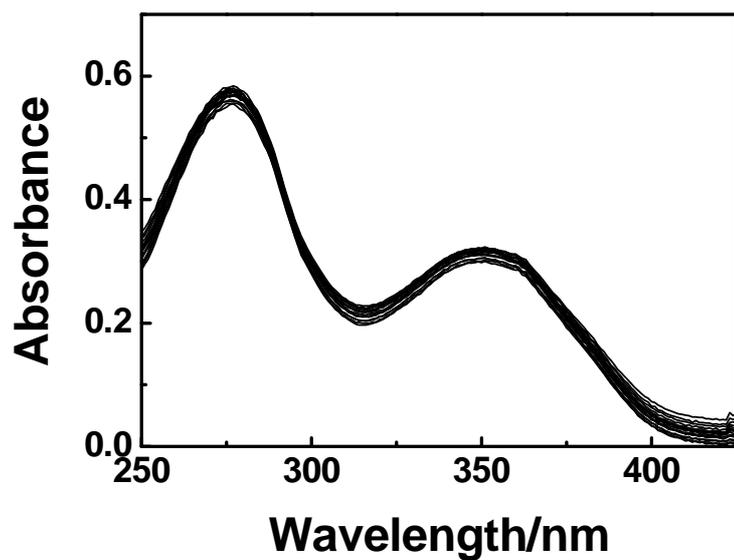


Figure S3 UV/Vis response of **2** ($10\mu\text{M}$) in MeCN/H₂O (9:1 v/v) solution upon addition of Hg²⁺ (0-2equiv).

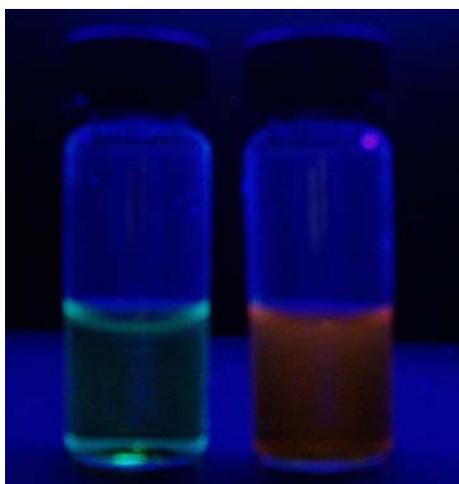


Figure S4 Fluorescence change observed for **1** (MeCN/H₂O=9:1, 0.5×10^{-5} M) upon addition of 1.5 equiv. Hg²⁺. Left: free **1**; right: **1**+Hg²⁺.



Figure S5 Left: $\mathbf{1} + \text{Hg}^{2+}$; right: $\mathbf{1} + \text{Hg}^{2+} + \text{thiourea}$.