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ELECTRONIC SUPPORTING INFORMATION

FOR

Coumarin-chalcone hybrid as selective and sensitive colorimetric and turn-on fluorometric sensor for Cd²⁺ detection

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Figure S1. ¹H-NMR spectrum of 2a in CDCl₃.



Figure S2. ¹³C-NMR spectrum of 2a in CDCl₃.



Figure S3. ¹H-NMR spectrum of **1a** in CDCl₃.



Figure S4. ¹³C-NMR spectrum of 1a in CDCl₃.



Figure S5. FT-IR spectrum of 1a in KBr pellet.



Figure S6. HRMS (ESI+) mass spectrum of 1a in CH_3CN .



Figure S7. Job's plot (stoichiometry determination of the $[1a + Cd^{2+}]$ complex) in HEPESbuffered solution (20 mM, CH₃CN: H₂O, 3:7, v/v, pH 7.0).



Figure S8. Normalized response of absorbance to changing Cd²⁺ ions concentrations for **1a**.



Figure S9. Normalized response of fluorescence signal to changing Cd²⁺ ions concentrations for **1a**.



Figure S10. ¹H-NMR titration spectra of **1a** with different equivalents (0, 5 and 10 equiv) of Cd²⁺.



Figure S11. HRMS (ESI+) mass spectrum of $1a + Cd^{2+}$ (1:1) complex in CH₃CN.

Type of probe	LOD	Merits of probe	Mode of assay	Reference
Porphyrin-based chemosensor	0.073 ×10 ⁻⁶ M	Colorimetric and Fluorometric	Ratiometric	1
C3-Symmetric Schiff-Base probe	5.57 ×10⁻6 M	Colorimetric and Fluorometric	Ratiometric	2
Rhodamine diaminomaleonitrile linked probe (RD- 1)	1.85 × 10 ⁻⁸ M	On Fluorescence Sensor	Enhancement	3
Diarylethene with 1,8-naphthyridine unit	1.97 × 10 ⁻⁷ M	Logic circuit application	Enhancement	4
Tetrakis(4-nitrophenyl) porphyrin	0.276 × 10 ⁻⁶ M	Real Sample analysis	Enhancement	5
Chromone Schiff-Base	1.1 × 10 ⁻⁶ M	Fluorometric	Enhancement	6
Quinoline-based fluorescent chemosensor	1.7 × 10 ⁻⁴ M	Simultaneous detection of Zn ²⁺ and Cd ²⁺	Enhancement	7
Porphyrin-based fluorescent probe	3.2 × 10 ^{−8} M	Cell imaging	Ratiometric	8
BODIPY derivative	7.7 × 10 ⁻⁸ M	Living Cells Imaging	Enhancement	9
Rhodamine-quinoline based probe	7.09 × 10 ⁻⁷ M	Colorimetric and fluorogenic	Enhancement	10
Rhodamine-based Fluorescent Chemosensor	4.7 × 10 ⁻⁸ mol/L	Colorimetric and Fluorometric	Enhancement	11
Quinoline-based probe	2.363 × 10 ⁻⁸ M	Live cells detection of Cd ²⁺	Ratiometric	12
4-Amino-3-hydrazino-5-mercapto-1,2,4- triazol based probe	3.0 × 10 ⁻⁸ M	Cd ²⁺ detection using modified gold nanoparticles	Ratiometric (UV–vis)	13
In-situ generated Chiral CdS quantum dots	5.97 × 10 ⁻⁵ M	Real water samples analysis	Enhancement	14
A new Coumarin based Fluorescent sensor	1.01 × 10 ⁻⁸ M	Colorimetric and Fluorometric	Enhancement	15
Coumarin-chalcone hybrid	5.84 × 10 ⁻⁸ M	Colorimetric turn-on Fluorometric sensor	Enhancement	This work

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