

Supporting Information for

Photochemical functionalisation of optical nanotips with a rhodamine chemosensor for remote through-fiber detection of Hg²⁺

Kun Chen,^a Catherine Adam,^b Neso Sojic,^{*b} and Michael Schmittel^{*a}

^a Center of Micro- and Nanochemistry and Engineering, Universität Siegen, Organische Chemie I, Adolf-Reichwein-Strasse 2, D-57068 Siegen, Germany

^b Groupe Nanosystèmes Analytiques, Institut des Sciences Moléculaires, CNRS UMR 5255, Université Bordeaux I, ENSCPB, 16 avenue Pey-Berland, 33607 Pessac, France.

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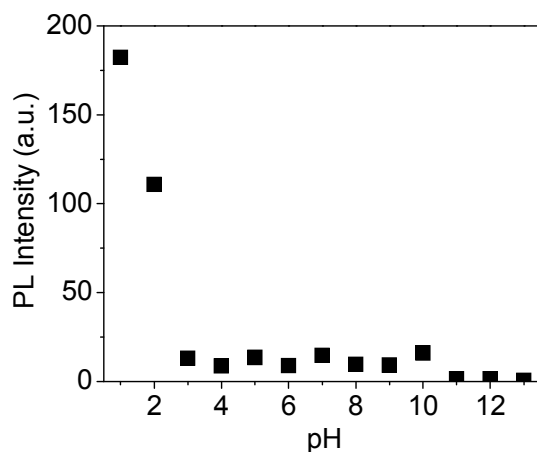


Fig. S1 PL intensity (at $\lambda_{em} = 556$ nm) of rhodamine 4 (10 μ M) in MeCN/buffer (95/5, v/v) from pH 1 to 13 ($\lambda_{ex} = 520$ nm).

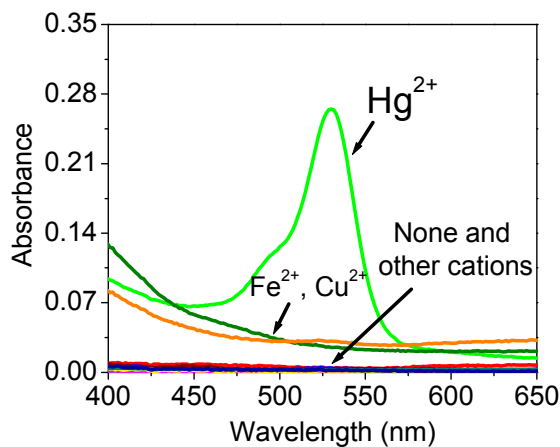


Fig. S2 UV-Vis absorption spectra of rhodamine 4 (10 μ M) in presence of different cations in buffer solution (MeCN / 0.1 M HEPES buffer (pH = 7.40 \pm 0.10) solution = 95:5, v/v).

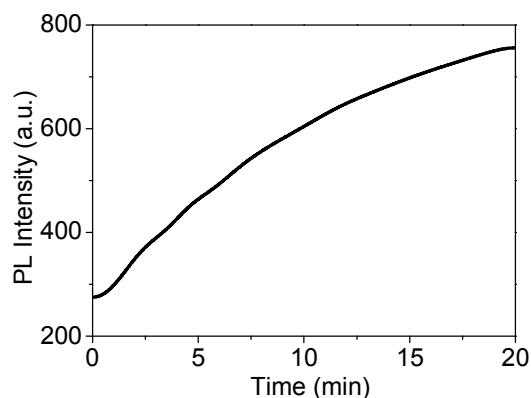


Fig. S3 Time response of rhodamine 4 (10 μ M) toward Hg^{2+} (0.2 mM) in buffer solution (MeCN / 0.1 M HEPES buffer (pH = 7.40 \pm 0.10) solution = 95:5, v/v) monitored by PL at $\lambda_{em} = 556$ nm ($\lambda_{ex} = 520$ nm).

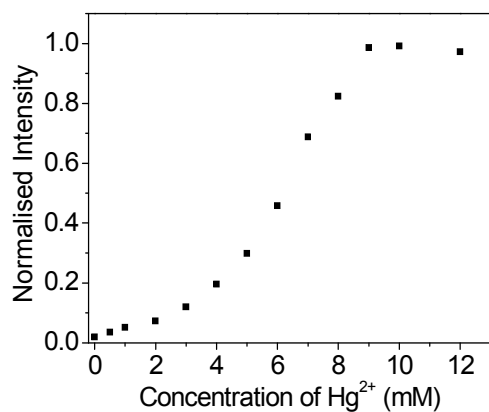


Fig. S4 PL titration (at $\lambda_{em} = 556$ nm, $\lambda_{ex} = 520$ nm) of rhodamine **4** (10 μ M) in presence of different amounts of Hg²⁺ in aqueous buffer solution (MeCN / 0.1 M HEPES buffer (pH = 7.40 \pm 0.10) = 50:50, v/v).

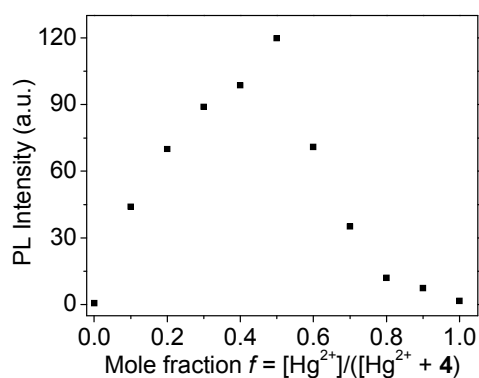


Fig. S5 Job plot of compound **4** vs. Hg²⁺ in MeCN with $[Hg^{2+}] + [4] = 10$ μ M followed by PL (at $\lambda_{em} = 556$ nm, $\lambda_{ex} = 520$ nm).

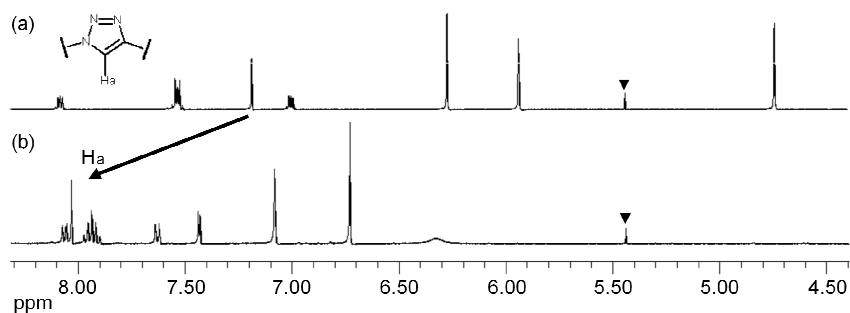


Fig. S6 ¹H NMR (400 MHz, CD₃CN) spectra of (a) **4**, (b) **4** + Hg²⁺. Dichloromethane is indicated by ▼.

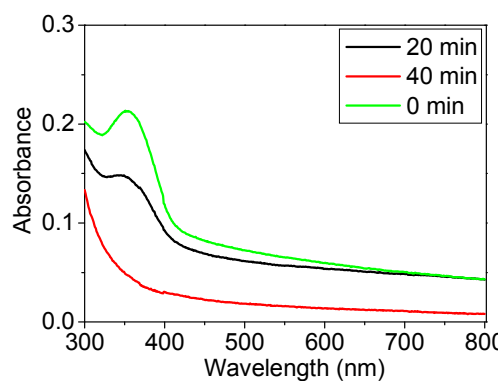


Fig. S7 UV-Vis absorption spectra of the surface-immobilised compound **10** on the glass slide after irradiation with the LC8 system for different periods of time in methanol.

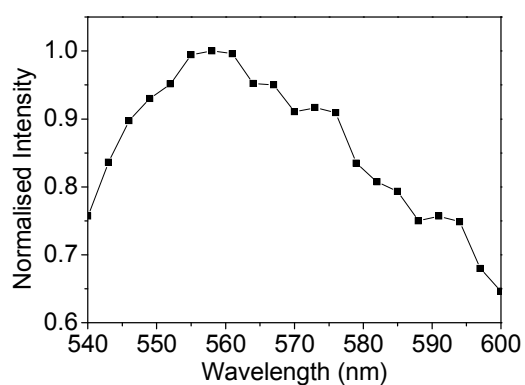


Fig. S8 The *in-situ* PL spectrum ($\lambda_{\text{ex}} = 514 \text{ nm}$) of the rhodamine-functionalised optical fiber bundles in presence of Hg^{2+} (5 mM) in MeCN / 0.1 M HEPES buffer ($\text{pH} = 7.40 \pm 0.10$) = 95:5, v/v.

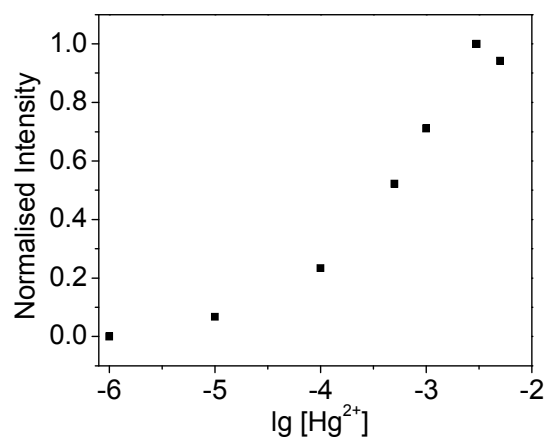


Fig. S9 Photoluminescence titration ($\lambda_{\text{em}} = 558 \text{ nm}$, $\lambda_{\text{ex}} = 514 \text{ nm}$) of rhodamine-functionalised fiber bundles vs. $\lg [\text{Hg}^{2+}]$ in MeCN / 0.1 M HEPES buffer solution (pH = 7.40 ± 0.10) = 95:5, v/v.