Supporting Information for

Photochemical functionalisation of optical nanotips with a rhodamine chemosensor for remote through-fiber detection of Hg^{2+}

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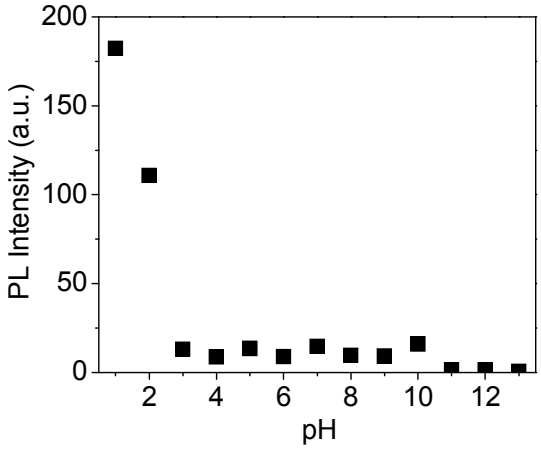

Fig. S1 PL intensity (at λ_{em} = 556 nm) of rhodamine **4** (10 μM) in MeCN/buffer (95/5, v/v) from pH 1 to 13 (λ_{ex} = 520 nm).

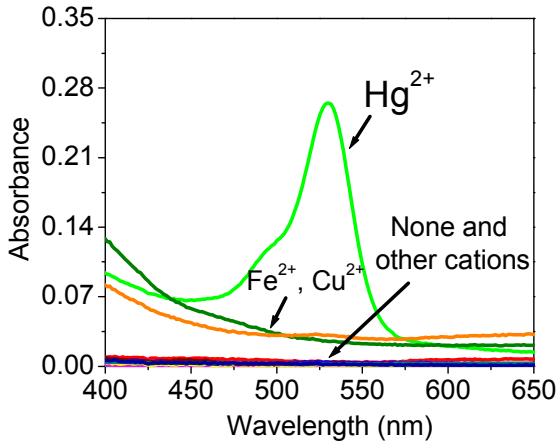

Fig. S2 UV-Vis absorption spectra of rhodamine **4** (10 μM) in presence of different cations in buffer solution (MeCN / 0.1 M HEPES buffer (pH = 7.40 ± 0.10) solution = 95:5, v/v).

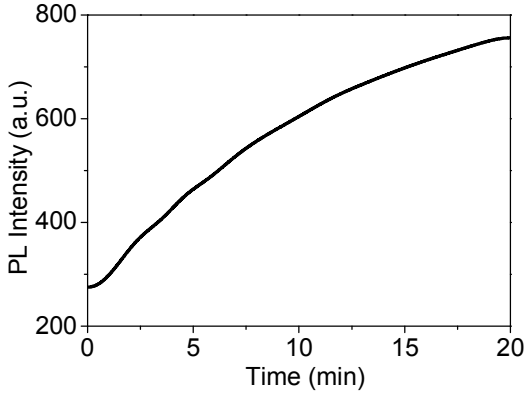

Fig. S3 Time response of rhodamine **4** (10 μM) toward Hg^{2+} (0.2 mM) in buffer solution (MeCN / 0.1 M HEPES buffer (pH = 7.40 ± 0.10) solution = 95:5, v/v) monitored by PL at λ_{em} = 556 nm (λ_{ex} = 520 nm).

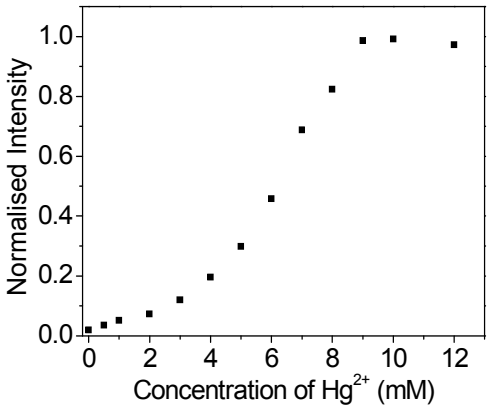

Fig. S4 PL titration (at λ_{em} = 556 nm, λ_{ex} = 520 nm) of rhodamine **4** (10 μM) in presence of different amounts of Hg^{2+} in aqueous buffer solution (MeCN / 0.1 M HEPES buffer (pH = 7.40 ± 0.10) = 50:50, v/v).

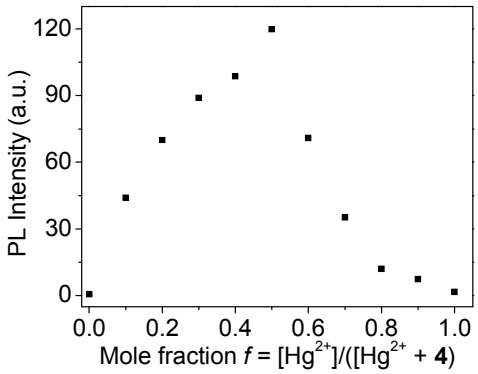

Fig. S5 Job plot of compound **4** *vs*. Hg^{2+} in MeCN with [Hg^{2+}] + [**4**] = 10 μM followed by PL (at λ_{em} = 556 nm, λ_{ex} = 520 nm).

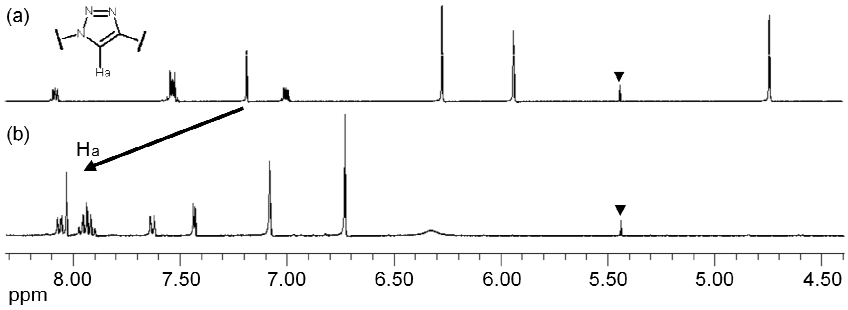

Fig. S6 ^{1}H NMR (400 MHz, CD_3CN) spectra of (a) **4**, (b) **4** + Hg^{2+}. Dichloromethane is indicated by▼.

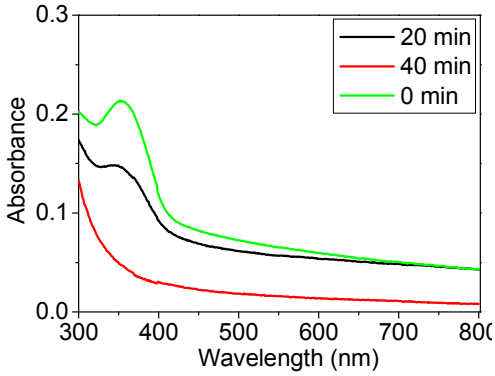

Fig. S7 UV-Vis absorption spectra of the surface-immobilised compound **10** on the glass slide after irradiation with the LC8 system for different periods of time in methanol.

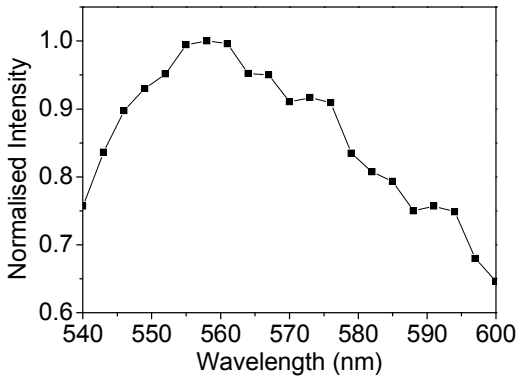

Fig. S8 The *in-situ* PL spectrum (λ_{ex} = 514 nm) of the rhodamine-functionalised optical fiber bundles in presence of Hg^{2+} (5 mM) in MeCN / 0.1 M HEPES buffer (pH = 7.40 ± 0.10) = 95:5, v/v.

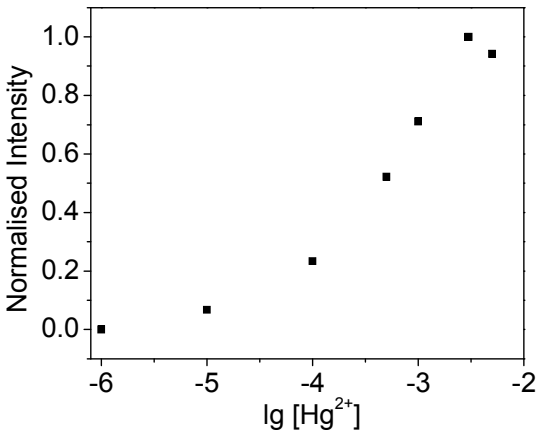

Fig. S9 Photoluminescence titration (λ_{em} = 558 nm, λ_{ex} = 514 nm) of rhodamine-functionalised fiber bundles *vs*. lg [Hg^{2+}] in MeCN / 0.1 M HEPES buffer solution (pH = 7.40 ± 0.10) = 95:5, v/v.