Electronic Supplementary Material (ESI) for RSC Advances.

Supplementary Information

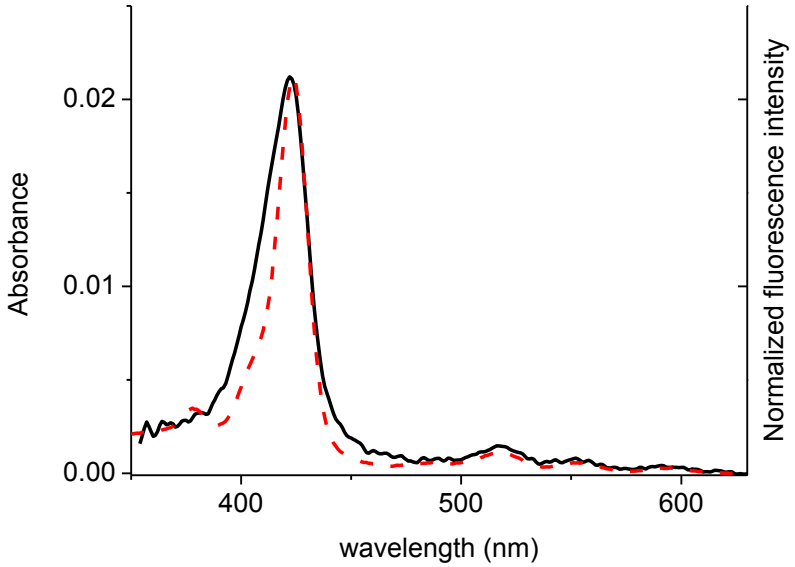

Figure S1. Normalized absorption (continuous line) and excitation spectra (λ_{em}=655 nm, dashed red line) of a (PDDA/PSS/PDDA/TPPS) ESAM.

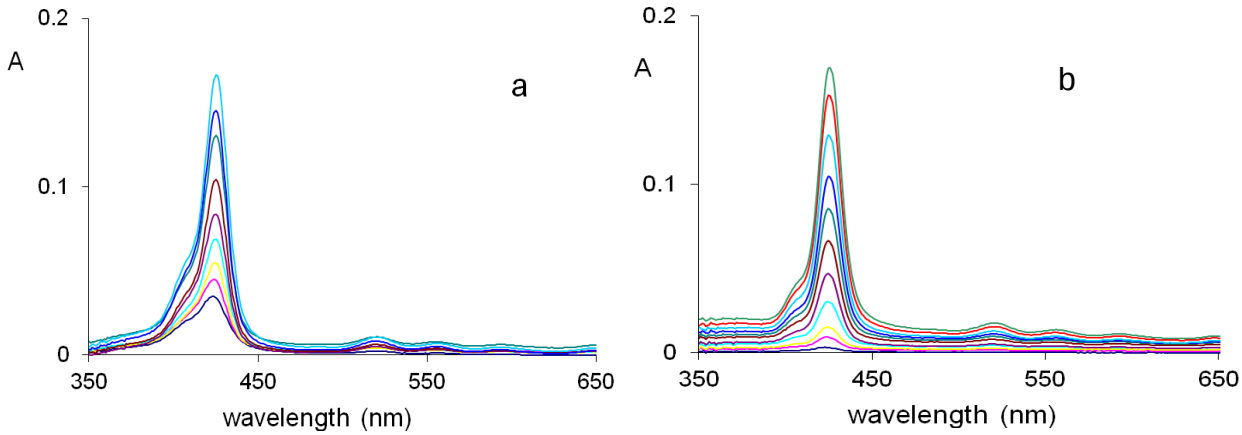

Figure S2. Absorption spectra of (PDDA/TPPS/PDDA/PSS)n (a) and (PDDA/TPPS-PSS 1:100)n films (b) after the deposition of a TPPS layer.

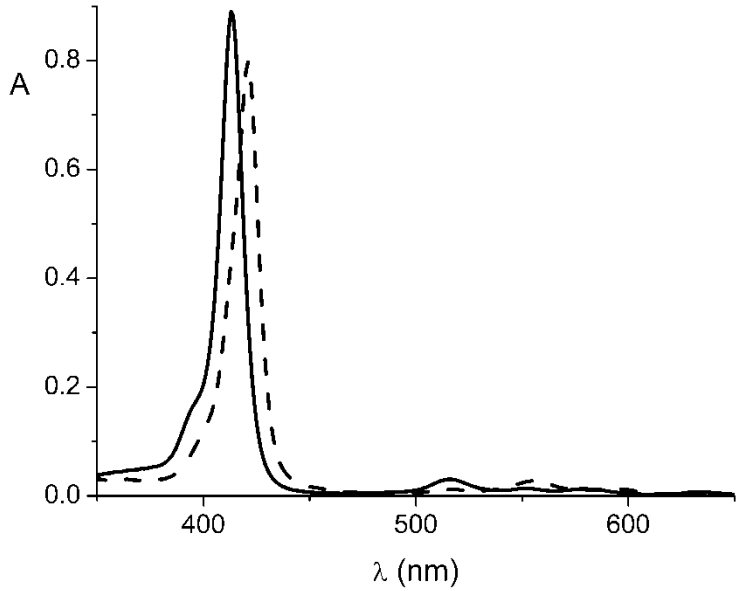

Figure S3. Absorption spectra of TPPS in aqueous solution (c = 1.9 x 10^{-6} M) at pH=8.0 (continuous line) and upon interaction with mercury(II) ions (dashed line). Mercury(II) ion concentration was 6.6 x 10^{-6} M.

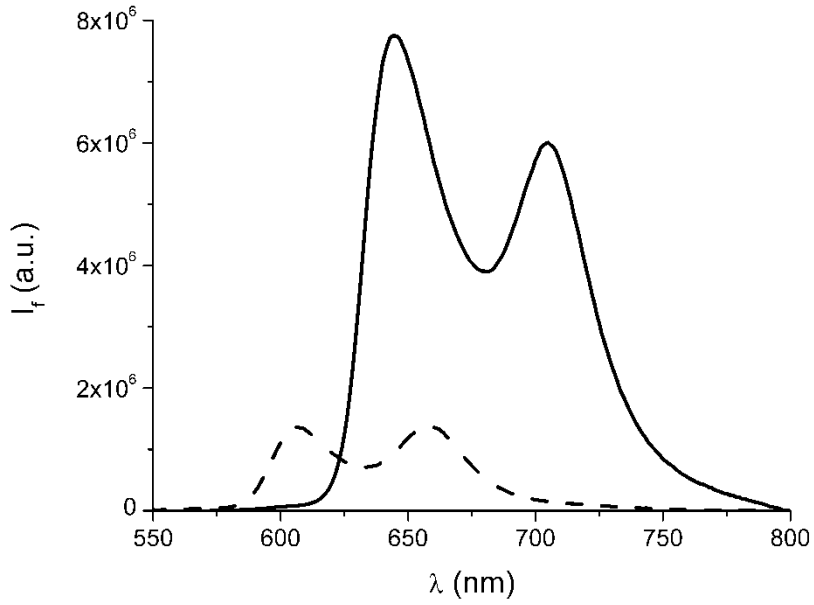

Figure S4. Fluorescence emission spectra of TPPS (c = 1.3 x 10^{-7} M) in aqueous solution at pH=8.0 (continuous line) and after addition of mercury(II) ions (dashed line). Mercury(II) ion concentration was 4.3 x 10^{-6} M. λex=416 nm.

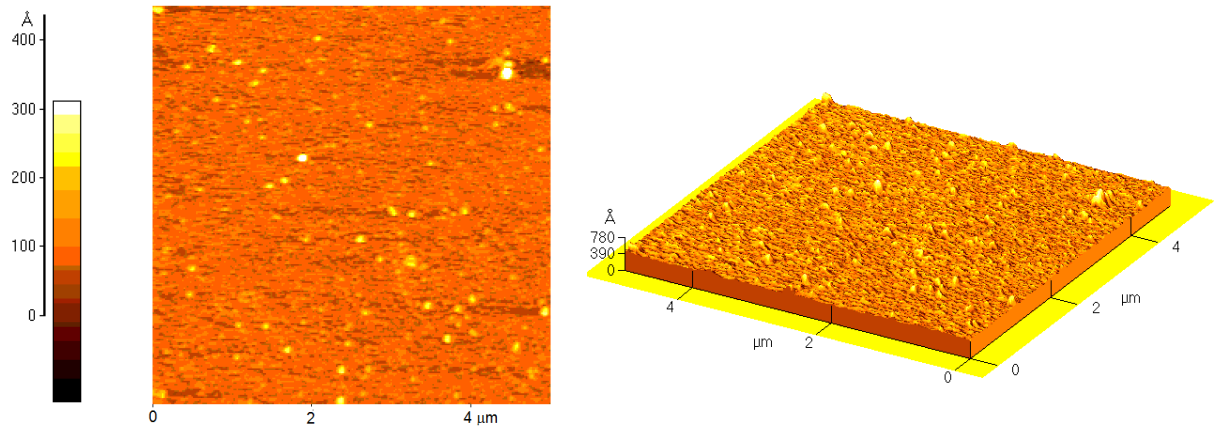

Figure S5. AFM image (5x5 µm) of a PDDA/TPPS film (on the left) and the corresponding three-dimensional representation (on the right).

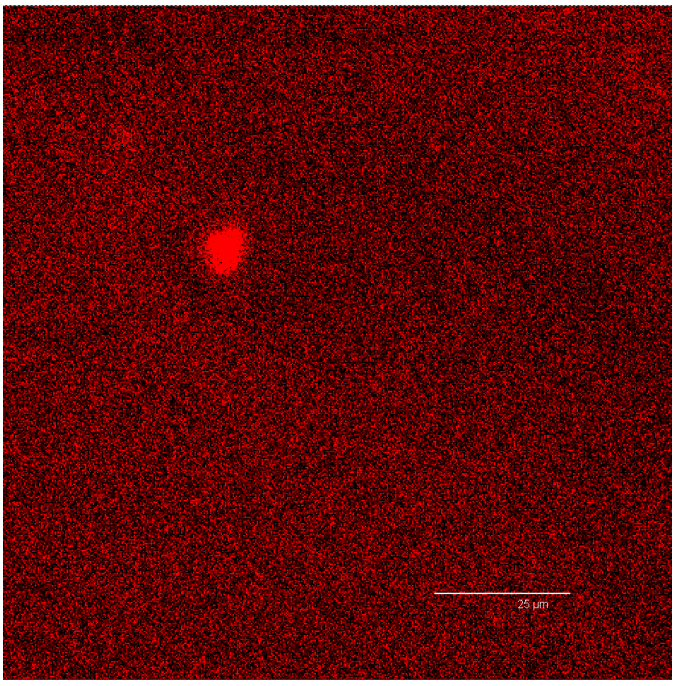

Figure S6. Fluorescence microscopy image (125x125 µm) of a $((PDDA/PSS)_{x2}/PDDA/TPPS)$.

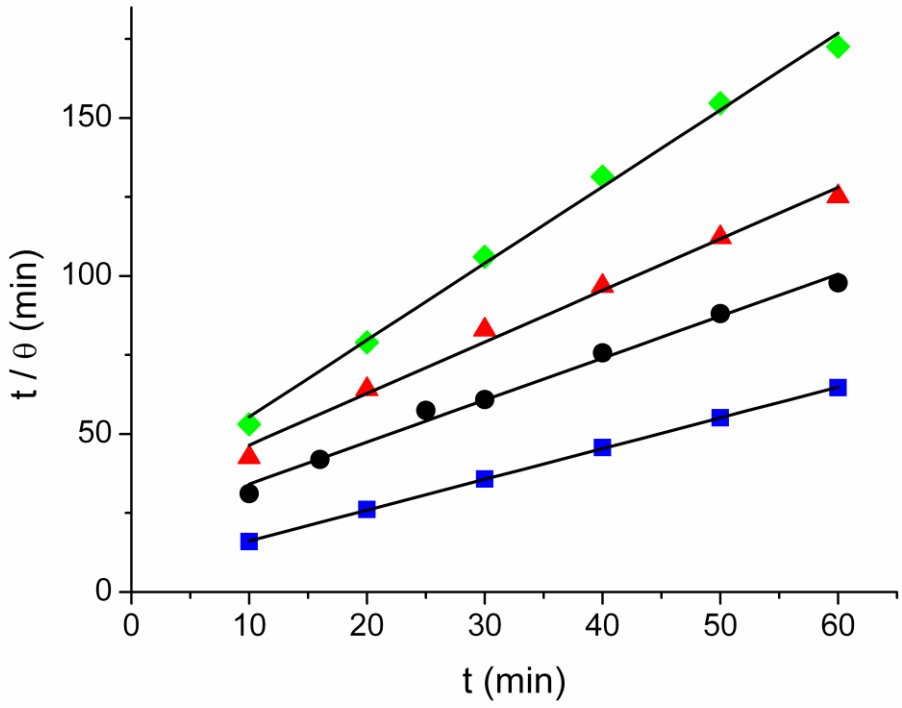

Figure S7. Adsorption kinetics of mercury(II) ions, at four different initial concentrations, on (PDDA/PSS/PDDA/TPPS) ESAM at 25°C in borate buffer at pH=8.0: linear fit to the pseudo-second-order equation is reported. The initial mercury(II) ion concentrations were: $3.3 \cdot 10^{-5}$ M (■), $3.3 \cdot 10^{-6}$ M (●), $6.7 \cdot 10^{-7}$ M (▲), $3.3 \cdot 10^{-7}$ M (♦).

Table S1. Slope and intercept values obtained from the linear fit of experimental data of adsorption to the kinetic pseudo-second-order equation (eq. 2b) as a function of $[Hg^{2+}]_0$; the values of the fractional surface coverage at equilibrium $\theta_{(eq)}$ are reported.

$[Hg^{2+}]_0$ (mol/L)	$\frac{1}{\theta_{(eq)}}$	$\frac{1}{k_2 \cdot N_{(eq)} \cdot \theta_{(eq)}}$ (min)	$\theta_{(eq)}$	R^2
3.3×10^{-5}	0.97	6.47	1.03	0.999
3.3×10^{-6}	1.33	20.92	0.75	0.995
6.7×10^{-7}	1.63	30.20	0.61	0.996
3.3×10^{-7}	2.43	31.17	0.41	0.998