

Supplemental Information

Selected data for *R,R*-**2**: ^1H NMR (300 MHz, CDCl_3) δ 7.85–7.16 (m, 30H), δ 4.44–4.67 (m, 4H), δ 4.13 (br, 2H), δ 3.77 (br, 4H), 1.73 (d, 6H, $J = 6.0$ Hz) ppm; FAB-LRMS ($\text{C}_{82}\text{H}_{70}\text{B}_2\text{N}_6\text{O}_{12}$, 3-nitrobenzylalcohol adduct) calcd 1352.5, found 1352.9. Anal Calcd for $\text{C}_{54}\text{H}_{50}\text{B}_2\text{N}_2\text{O}_4$: C, 79.8; H, 6.20; N, 3.45. Found: C, 79.4, H, 6.21; N, 3.45. $[\alpha]_{\text{D}}^{22} = -100 \pm 2^\circ$ ($c = 0.5$, dichloromethane).

Selected data for *S,S*-**2**: ^1H NMR (300 MHz, CDCl_3) δ 7.83–7.13 (m, 30H), δ 4.43–4.65 (m, 4H), δ 4.09 (br, 2H), δ 3.77 (br, 4H), 1.71 (d, 6H, $J = 6.0$ Hz) ppm; FAB-LRMS ($\text{C}_{82}\text{H}_{70}\text{B}_2\text{N}_6\text{O}_{12}$, 3-nitrobenzylalcohol adduct) calcd 1352.5, found 1353.0. Anal Calcd for $\text{C}_{54}\text{H}_{50}\text{B}_2\text{N}_2\text{O}_4 \cdot 0.1\text{CH}_2\text{Cl}_2$: C, 79.1; H, 6.16; N, 3.41. Found: C, 79.0, H, 6.11; N, 3.36. $[\alpha]_{\text{D}}^{22} = +92 \pm 2^\circ$ ($c = 0.5$, dichloromethane).

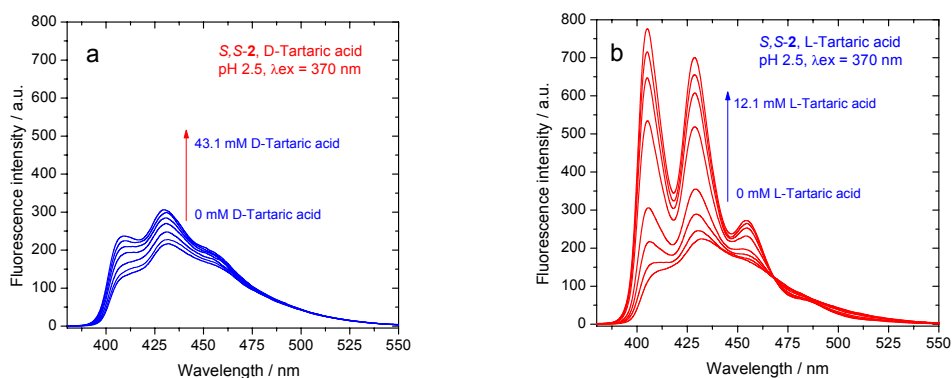


Figure 1. Emission spectra of *S,S*-**2** in the presence of tartaric acid. a), *S,S*-**2** with D-tartaric acid; b), *S,S*-**2** with L-tartaric acid, λ_{ex} at 370 nm, pH 2.5. 3.0×10^{-6} mol dm⁻³ of sensors in 5.0×10^{-2} mol dm⁻³ NaCl solution (52.1% methanol in water). 18°C.

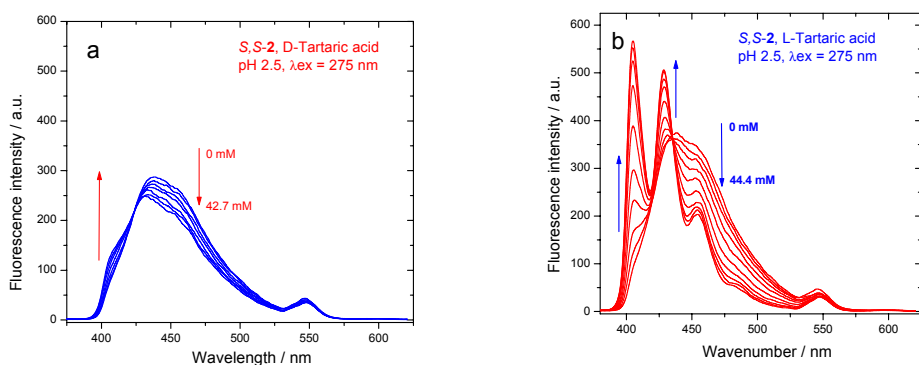


Figure 2. Emission spectra of *S,S*-**2** in the presence of tartaric acid. a), *S,S*-**2** with D-tartaric acid; b), *S,S*-**2** with L-tartaric acid, λ_{ex} at 275 nm, pH 2.5. 1.0×10^{-6} mol dm⁻³ of sensors in 5.0×10^{-2} mol dm⁻³ NaCl ionic buffer (52.1% methanol in water). 23°C.

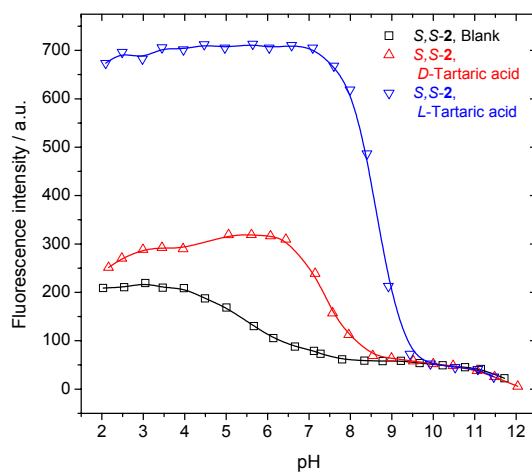


Figure 3. Fluorescence intensity-pH profile of the *S,S*-2 with D- and L-tartaric acid; 3.0×10^{-6} mol dm⁻³ of sensor in 0.05 mol dm⁻³ sodium chloride ionic buffer (52.1% methanol), [L- and D-Tartaric acid] = 0.05 M. λ_{ex} 370 nm, λ_{em} 429 nm. 22°C.

S-sensor, apparent $pK_a = 5.72 \pm 0.07$, $r^2 = 0.98$

L-acid, apparent $pK_a = 7.42 \pm 0.04$, $r^2 = 0.998$

D-acid, apparent $pK_a = 8.65 \pm 0.04$, $r^2 = 0.995$

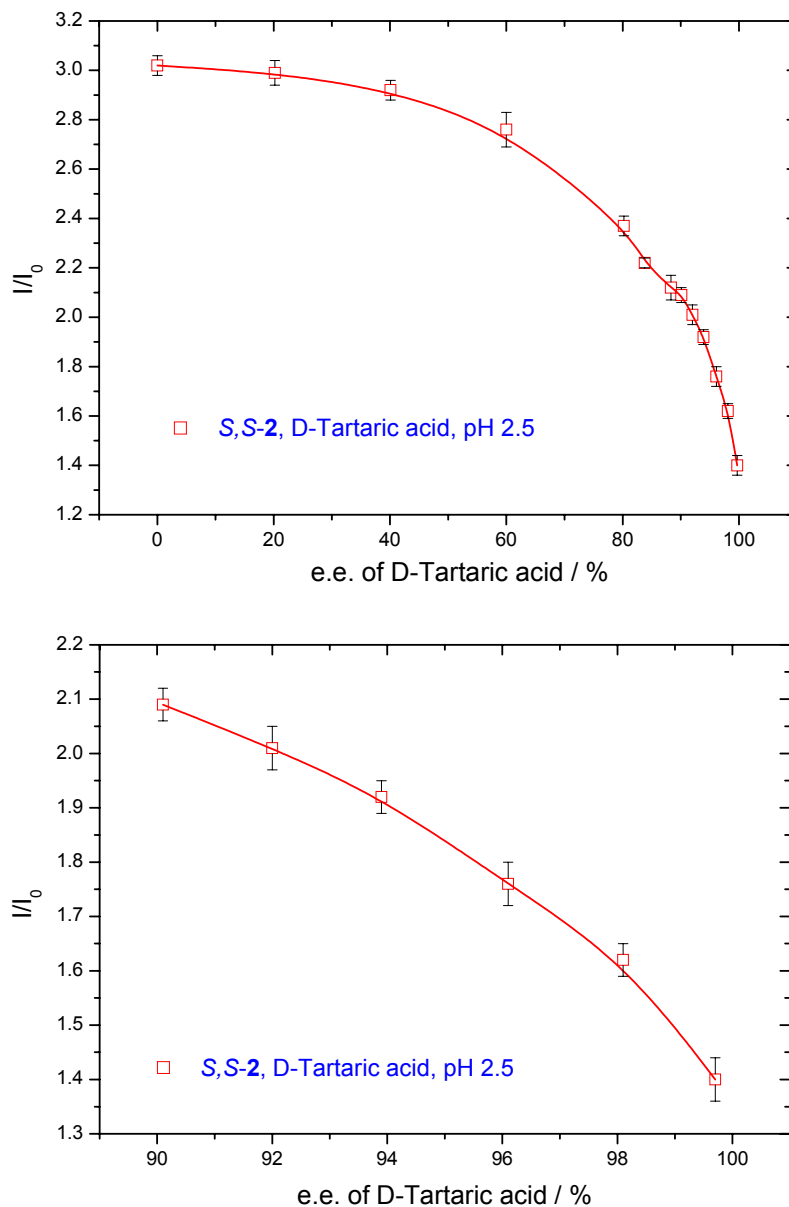


Figure 4. Fluorescence intensity changes of *S,S*-2- vs enantiomeric composition of D-Tartaric acid. 3.0×10^{-6} mol dm⁻³ of *S*-sensor in 5.0×10^{-2} mol dm⁻³ M NaCl buffer (52.1% methanol in water), λ_{ex} 370 nm, λ_{em} 429 nm, pH 2.5, 20°C. [D-Tartaric acid] + [L-Tartaric acid] = 6.0×10^{-2} mol dm⁻³. The variation of the e.e. value of the D-tartaric acid was achieved with mixing the D-Tartaric acid and the L-Tartaric acid.

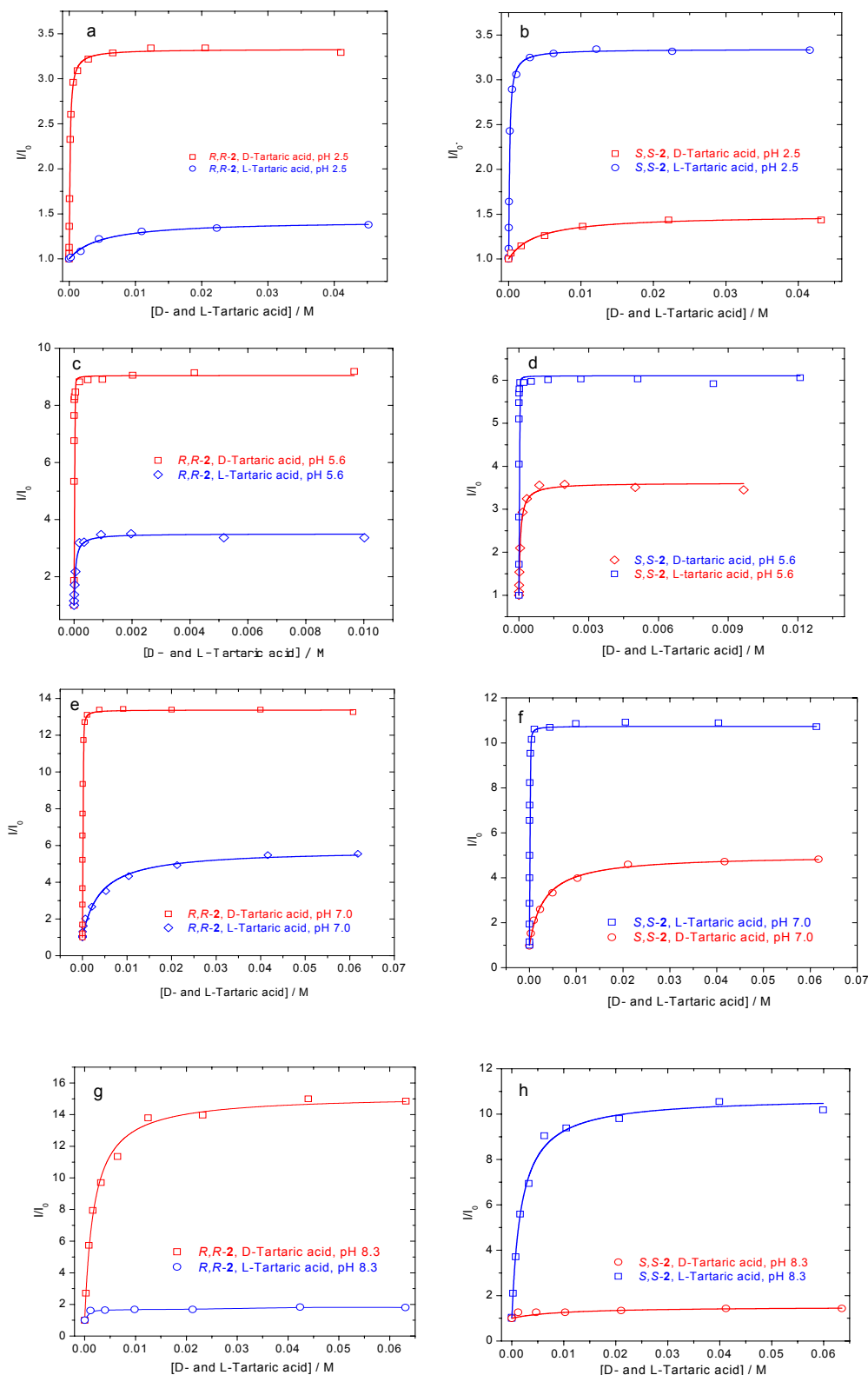


Figure 5. Fluorescence intensity of the $R,R-2$ and $S,S-2$ vs. concentration of D- or L-Tartaric acid. 3.0×10^{-6} mol dm^{-3} of sensor in 0.05 mol dm^{-3} sodium chloride ionic buffer (52.1% methanol), [D- or L-Tartaric acid] = 0-0.01 M. The solid lines are the 1:1 binding regression results. λ_{ex} 370 nm, λ_{em} 429 nm. 22°C. pH 2.5, 5.6, 7.0, 8.3.