**Electronic supplementary information**

**Fig.ESI1:** UV-Vis spectra of 60 µM FeTSPP in water pH 6.3 (a), in PBS pH 6.25 (b), pH 7.5 (c).

**Fig.ESI2:** X-ray powder diffraction patterns in the 2θ range 5-65° (inset 1-30°) of (a) Zn₂Cr-ZnTSPP and (b) Zn₂Cr-FeTSPP. Labels give the Bragg reflections in the space group $R\bar{3}m$.

FTIR spectra (Fig.ESI3) show besides the vibration bands of the ZnCr LDH framework at 3500-3400 cm⁻¹ ($\nu_{\text{OH}}$) and at 576 and 507 cm⁻¹ corresponding to the $\nu_{\text{MO}}$ lattice vibrations, the characteristic bands due to the TSPP porphyrins. IR spectra of TSPP porphyrins are characterized...
by four main regions recorded between 2000 and 400 cm\(^{-1}\). Vibration bands in the region 1600-1350 cm\(^{-1}\) are due to stretching vibrations of C=C and C=N in phenyl and pyridyl aromatic ring. Bands situated between 1200 and 1010 cm\(^{-1}\) are typical of phenyl-sulfonate groups and those between 1000 and 900 cm\(^{-1}\) of \(\nu\)C-H rock and \(\delta\)N-H pyrrole groups. Finally, the 700-800 cm\(^{-1}\) region is attributed to out of plane C-H vibrations. The fundamental stretching vibrations \(\nu_{as}(SO_3)^{-}\) and \(\nu_{s}(SO_3)^{-}\) are observed at 1176 and 1037 cm\(^{-1}\) for Zn\(_2\)Cr-ZnTSPP and at 1180 and 1038 cm\(^{-1}\) for Zn\(_2\)Cr-FeTSP. The position of these two bands are practically the same than that observed reported for the corresponding ZnAl-porphyrin hybrids, with bands at 1171 and 1036 cm\(^{-1}\) for ZnAl-ZnTSPP\(^{2}\) and 1184 and 1039 cm\(^{-1}\) for ZnAl-FeTSP\(^{3}\). These peak positions are similar to the free porphyrins, suggesting that SO\(_3\)^− groups of intercalated porphyrins interact with the LDH layers via weak noncovalent interactions.

![Fig.ESI3](image1.png)

**Fig.ESI3:** FTIR spectra of Zn\(_2\)Cr-ZnTSPP (a) and Zn\(_2\)Cr-FeTSP (b).

![Fig.ESI4](image2.png)

**Fig.ESI4:** Cyclic voltammograms recorded in different PBS using the same Zn\(_2\)Cr-ZnTSPP/GCE (20\(^{th}\) cycles) (A) and Zn\(_2\)Cr-FeTSP/GCE (10\(^{th}\) cycles) (B) (0.1 M PBS under argon, \(v = 50\) mV s\(^{-1}\)).
References