Electronic Supplementary Information (ESI)

Preparation of Hg$^{2+}$ Selective Sensors Based on Surface Modified Core-Shell Aluminosilicate Nanoparticles

Supplementary Materials Include:

**Figure 1S.** Synthesis of the system.

**Figure 2S.** X-ray powder diffraction pattern of the M1NA system (top) and IR spectra (bottom) for boehmite (dashed), amorphous silica (dotted) and non-functionalized support (full line).

**Figure 3S.** Steady-state fluorescence emission for M3NA ($\lambda_{\text{exc}} = 350$ nm) recorded at 298.1 ± 0.1K in pure water, pH values: 2.09, 2.52, 3.85, 4.516, 5.35, 6.28, 7.19, 8.19, 9.10, 10.15, 10.96.

**Figure 4S.** Fluorescence emission intensity ($\lambda_{\text{em}} = 416$ nm) vs. pH curve of M1NA recorded in pure water at 298.1 ± 0.1 K.

**Figure 5S.** Fluorescence emission intensity ($\lambda_{\text{em}} = 416$ nm) vs. pH curve of M3NA recorded in pure water at 298.1 ± 0.1 K.

**Figure 6S.** Bar diagram representation of the % response relative fluorescence intensity of M1NA (left) and M3NA (right) upon addition of Cu$^{2+}$, Zn$^{2+}$, Cd$^{2+}$, Pb$^{2+}$, Hg$^{2+}$ in 1:1 M:L molar ratio at pH 7.5. Titrations performed in pure water at 298.1 ± 0.1 K, $\lambda_{\text{exc}} =$

**Figure 7S.** Change in the fluorescence with pH for the different M$^{2+}$-M1NA (top) and M$^{2+}$-M3NA (bottom) systems.
Figure 1S.- Synthesis of the system.
Figure 2S.- X-ray powder diffraction pattern of the M1NA system (top) and IR spectra (bottom) for boehmite (dashed), amorphous silica (dotted) and non-functionalized support (full line).
Figure 3S. Steady-state fluorescence emission for M3NA ($\lambda_{\text{exc}} = 350$ nm) recorded at 298.1 ± 0.1K in pure water, pH values: 2.09, 2.52, 3.85, 4.516, 5.35, 6.28, 7.19, 8.19, 9.10, 10.15, 10.96.
**Figure 4S.** Fluorescence emission intensity ($\lambda_{em} = 416$ nm) vs. pH curve of M1NA recorded in pure water at 298.1 ± 0.1 K.
**Figure 5S.** Fluorescence emission intensity ($\lambda_{em} = 416$ nm) vs. pH curve of M3NA recorded in pure water at 298.1 ± 0.1 K.
Figure 6S. Bar diagram representation of the % response relative fluorescence intensity of M1NA (left) and M3NA (right) upon addition of Cu$^{2+}$, Zn$^{2+}$, Cd$^{2+}$, Pb$^{2+}$, Hg$^{2+}$ in 1:1 M:L molar ratio at pH 7.5. Titrations performed in pure water at $298.1 \pm 0.1$ K, $\lambda_{exc} = 350$ nm.
Figure 7S. Change in the fluorescence with pH for the different $M^{2+}$-M1NA (top) and $M^{2+}$-M3NA (bottom) systems.