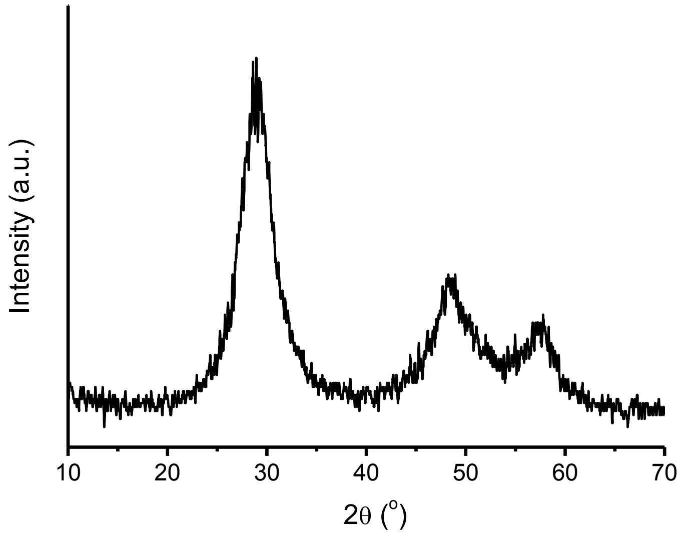
Electronic Supporting Information

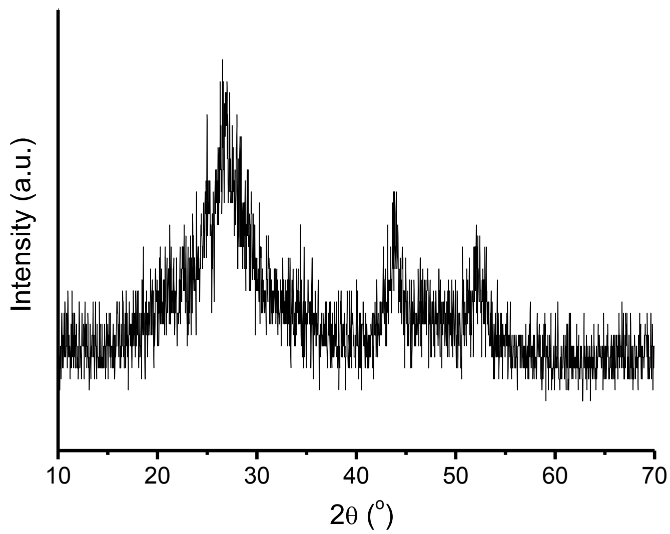
Experimental section

Chemicals: Chemicals were purchased from commercial sources. All solvents were analytical grade and without further purification. $Eu(NO_3)_3 \cdot xH_2O$ was prepared by dissolving its oxide Eu_2O_3 in concentrated nitric acid (HNO_3).

Physical characterization: X-ray diffraction patterns (SAXRD) were recorded on a Rigaku D/ max-Rb diffractometer equipped with a Cu anode in a 2θ range from 10 to 70 ^{o}. Fourier transform infrared spectra (FTIR) were measured within KBr slices from 4000–400 cm^{-1} using a Nexus 912 AO446 infrared spectrum radiometer. Luminescence excitation and emission spectra of the solid samples were obtained on Edinburgh FLS920 spectrophotometer. The outer luminescent quantum efficiency was determined using an integrating sphere (150 mm diameter, $BaSO_4$ coating) from Edinburgh FLS920 phosphorimeter. The quantum yield can be defined as the integrated intensity of the luminescence signal divided by the integrated intensity of the absorption signal. The absorption intensity was calculated by subtracting the integrated intensity of the light source with the sample in the integrating sphere from the integrated intensity of the light source with a blank sample in the integrating sphere.



a



b

Figure S1 The XRD patterna of ZnS (a) and CdS (b) nanoparticles

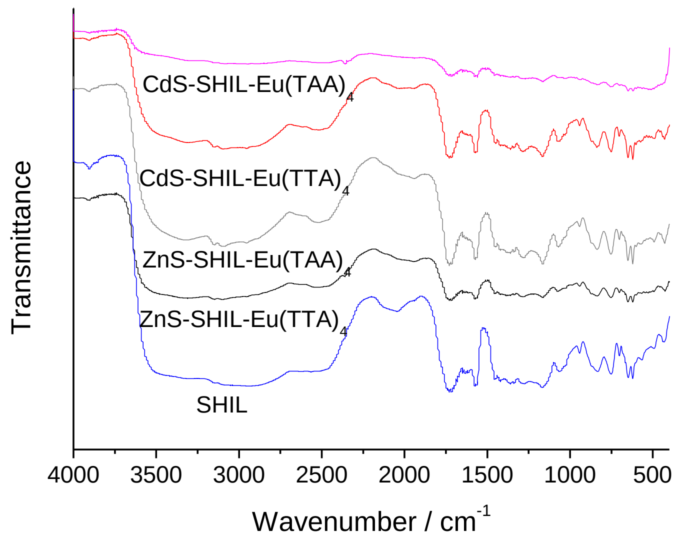


Figure S2 FTIR spectra for the ionic liquid SHIL and the hybrid soft materials MS-SHIL-Eu(L)$_4$ (M = Zn, Cd; L = TTA, TAA)

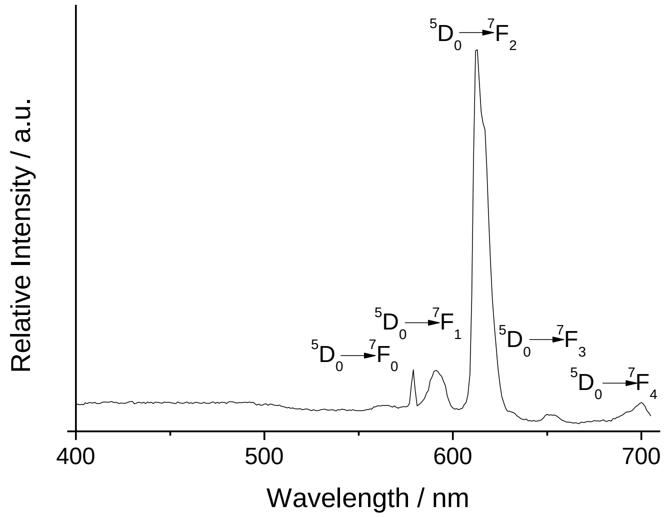


Figure S3 Selected luminescent spectrum of solution of $Eu(TTA)_4$ in ionic liquid

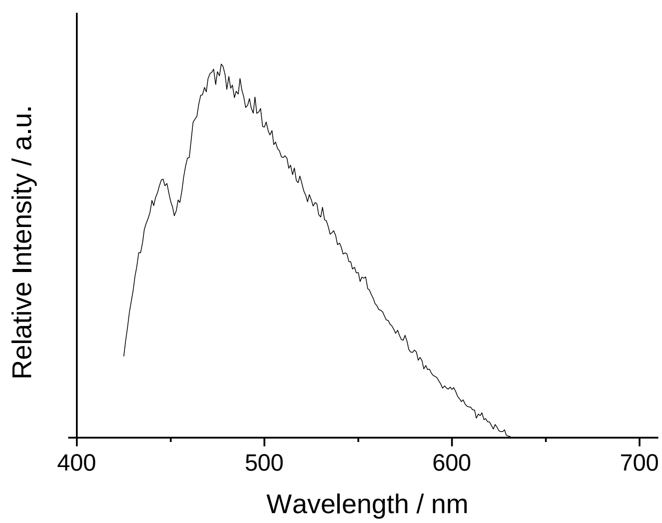


Figure S4 Selected luminescent spectrum of suspension of quantum dots (CdS) in ionic liquid