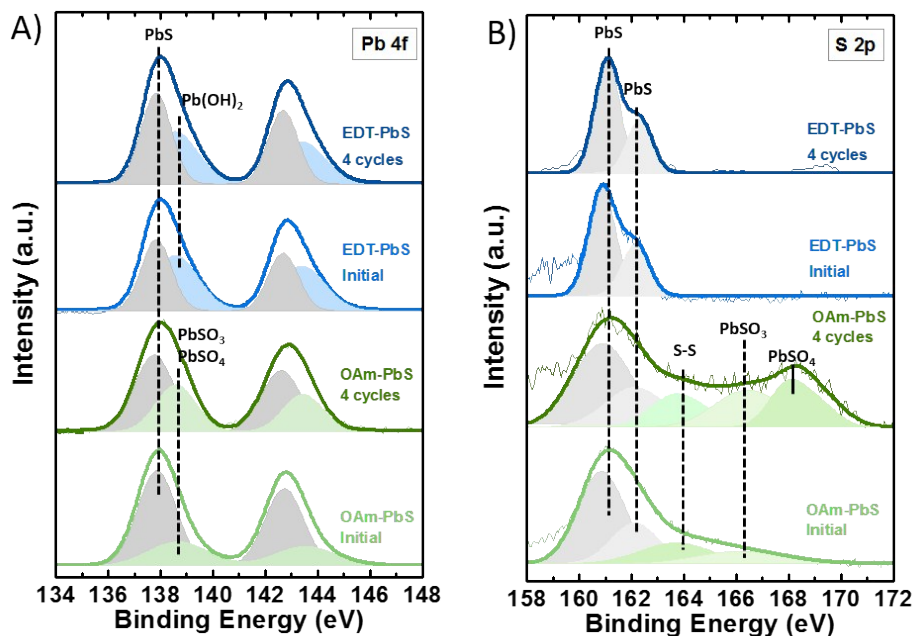


Figure 1 shows the XPS spectra of OAm-PbS and EDT-PbS before and after 4 photocatalytic cycles. XPS analysis of OAm-PbS after 4 photocatalytic cycles reveals the presence of  $(\text{SO}_3)^{2-}$  and  $(\text{SO}_4)^{2-}$  due to the oxidation of  $\text{S}^{2-}$  (Figure S1). In case of EDT-PbS, XPS analysis does not show a significant change after 4 cycles of photocatalysis.



**Figure S1.** XPS spectra of the PbS QD films capped with OAm and EDT and MPA before and after 4 photocatalytic cycles. a) XPS spectra of Pb 4f, b) XPS spectra of S 2p