Supplementary Information

Tin-derivatives sandwich type polyoxometalates supported on Nd-doped TiO₂ nanoparticles as efficient and reusable catalysts in the oxidation of sulfides and alcohols

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Figure S1. FT-IR spectra of the prepared nanocomposites Nd-TiO₂, **1a** (10–30%) and $[(\text{HOSn}^{\text{IV}}\text{OH})_3(\text{AsW}_9\text{O}_{34})_2]^{12-}$.

Figure S2. FT-IR spectra of the prepared nanocopposites Nd-TiO₂, **3a** (10–30%) and

Figure S3. The ATR FTIR spectrum of **2a**.

Figure S4. The EDX spectrum of **1a** (20%).

Figure S5. The EDX spectrum of **3a** (20%).

Figure S6. The IR spectra of **2**, **2a** and reused **2a** (**2a***).

Figure S7. UV and visible spectra of tin(II) derivatives (top) and tin(IV) derivatives (bottom). The tin(II) derivatives are orange or orange-yellow but after treatment by bromine aqueous solution turn to colorless.