

Figure S1 IR spectra of [Tl(Tm^{tBu})]₂·2H₂O (red trace) and [In(Tm^{tBu})₂](InCl₄) (blue trace) at room temperature.

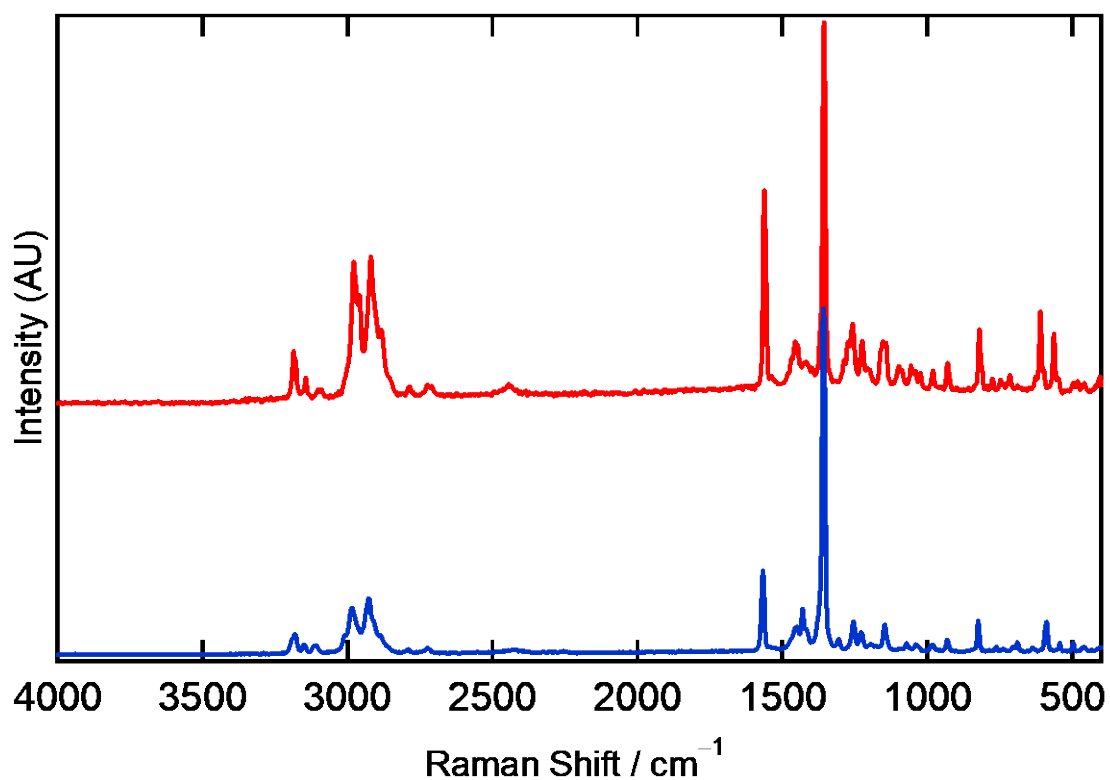


Figure S2 FT-Raman spectra of [Tl(Tm^{tBu})]₂·2H₂O (red trace) and [In(Tm^{tBu})₂](InCl₄) (blue trace) at room temperature.

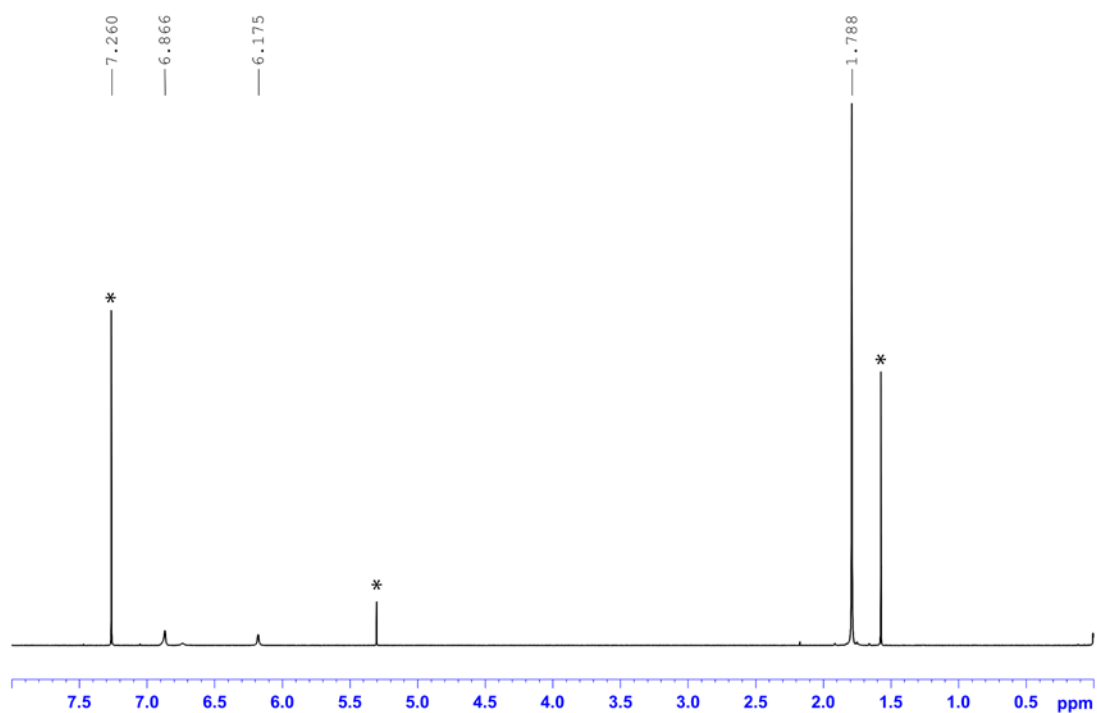


Figure S3 ^1H -NMR spectrum of $[\text{Tl}(\text{Tm}^{\text{tBu}})]_2 \cdot 2\text{H}_2\text{O}$ at room temperature in CDCl_3 . (* marks solvents and water peaks).

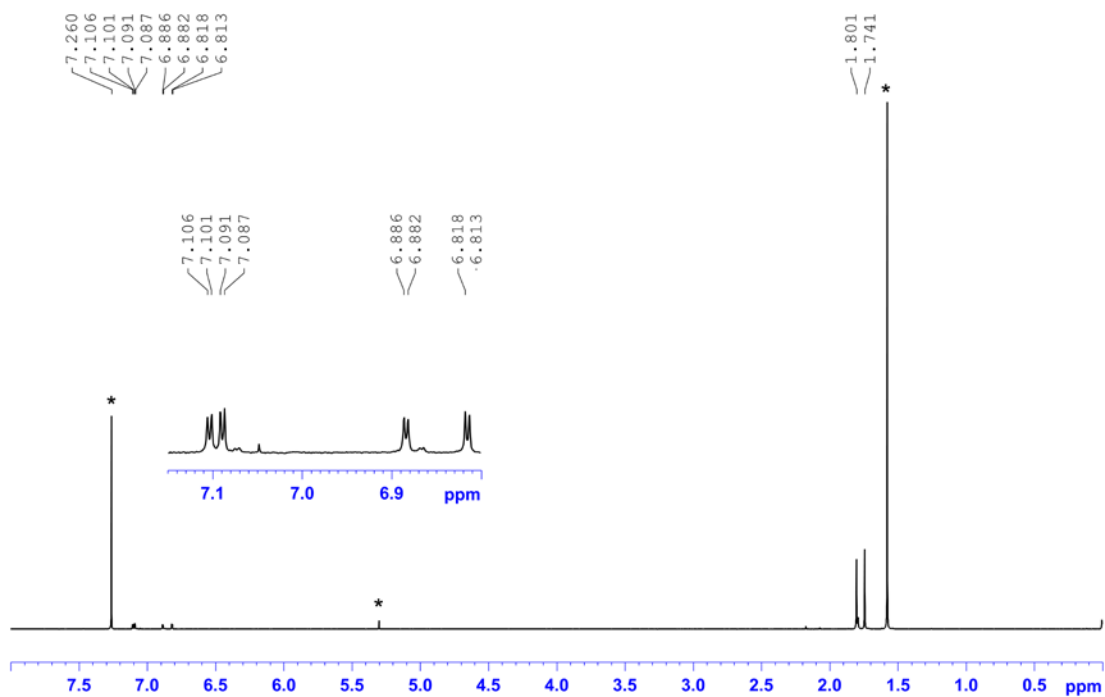


Figure S4 ^1H -NMR spectrum of $[\text{In}(\text{Tm}^{\text{tBu}})_2](\text{InCl}_4)$ at room temperature in CDCl_3 . (* marks solvents and water peaks).

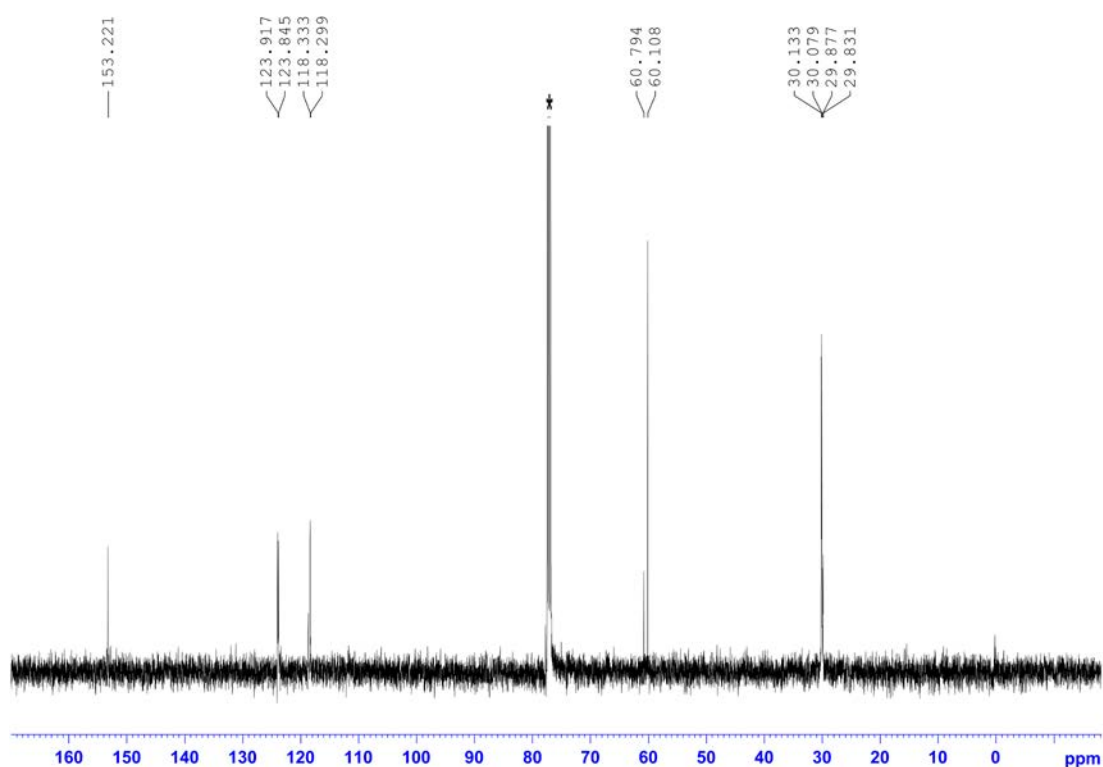


Figure S5 ^{13}C -NMR spectrum of $[\text{In}(\text{Tm}^{\text{tBu}})_2](\text{InCl}_4)$ at room temperature in CDCl_3 . (* marks solvent peaks).

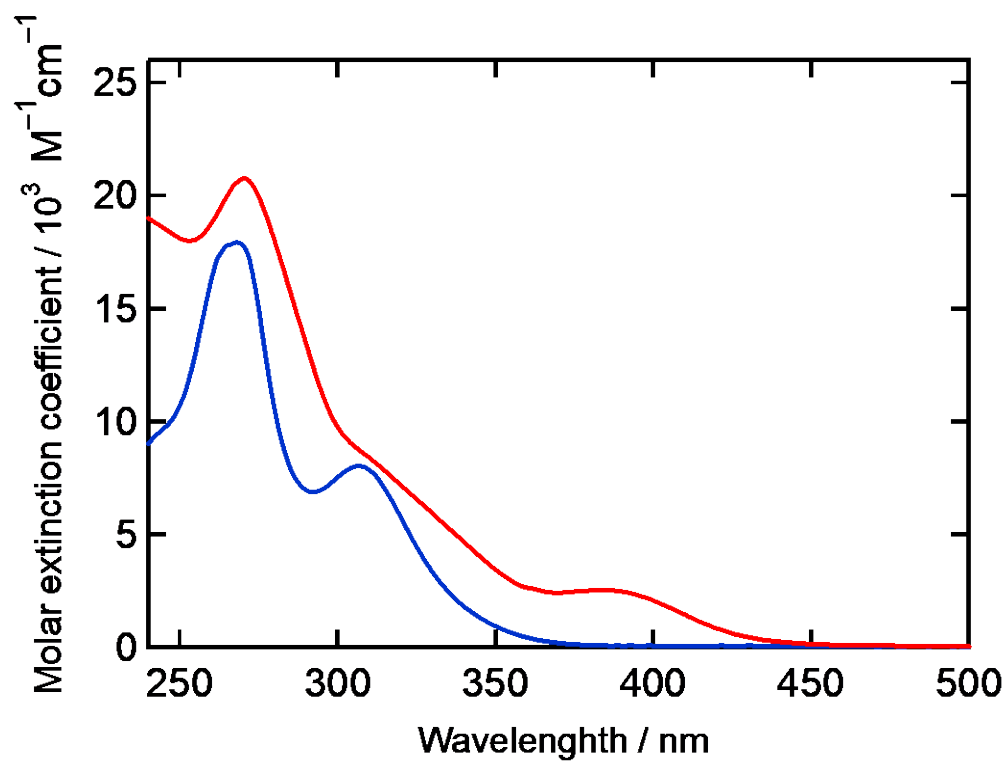


Figure S6 UV-Vis spectra of $[\text{Tl}(\text{Tm}^{\text{tBu}})_2] \cdot 2\text{H}_2\text{O}$ (red trace) and $[\text{In}(\text{Tm}^{\text{tBu}})_2](\text{InCl}_4)$ (trace line) in CH_2Cl_2 at room temperature.