Supporting Information

Selective Self-Assembly of Hexameric Homo- and Hetero-Polymetallic Lanthanide Wheels: Synthesis, Structure and Photophysical Studies

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Contribution from

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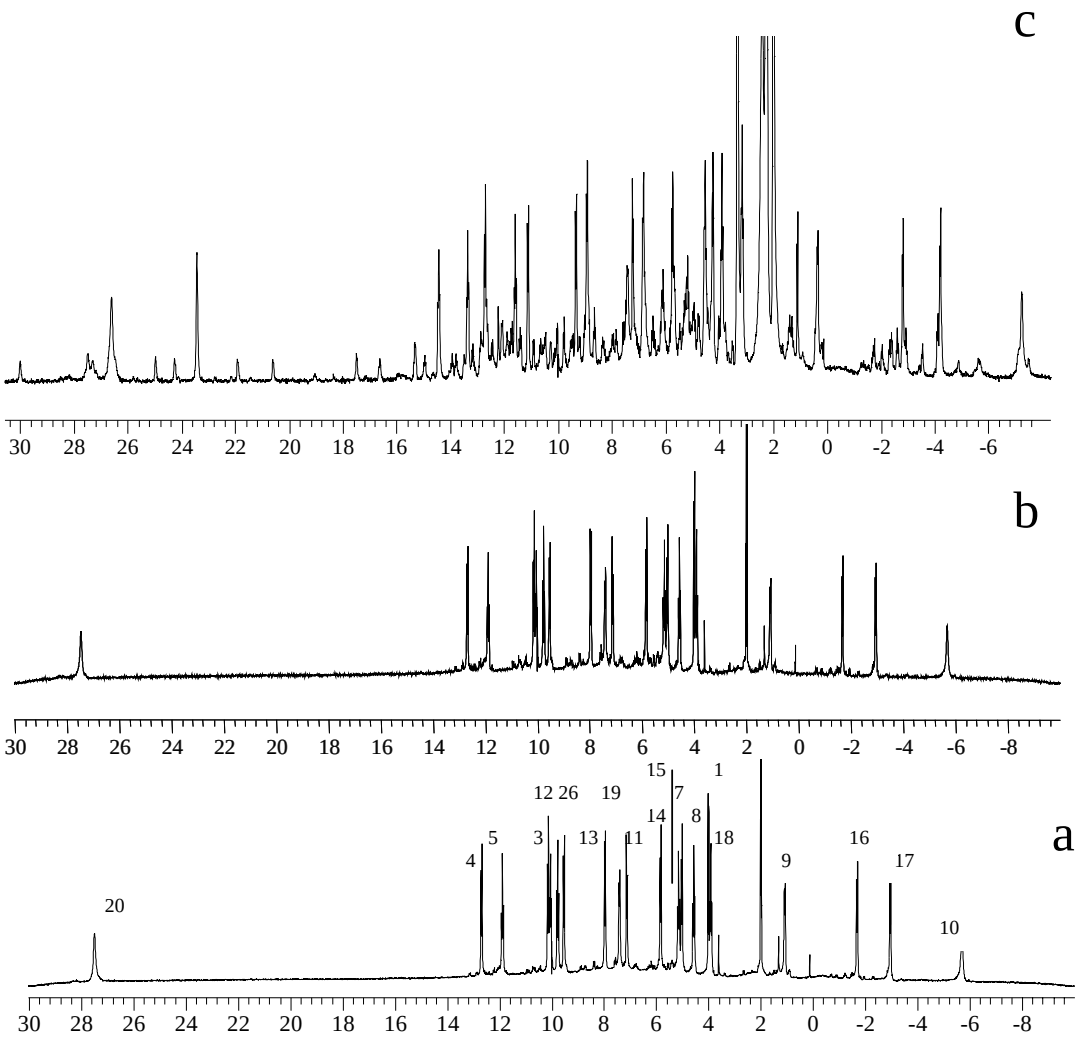

Figure S1 :^{1}H NMR spectrum of a 6:1 mixture of EuL_2 ($1.2x10^{-2}$ M) and $Sm(Otf)_3$ in anhydrous CD_3CN a) after 10min. b) after 2 days c) after 3 weeks (298 K, 200 MHz).

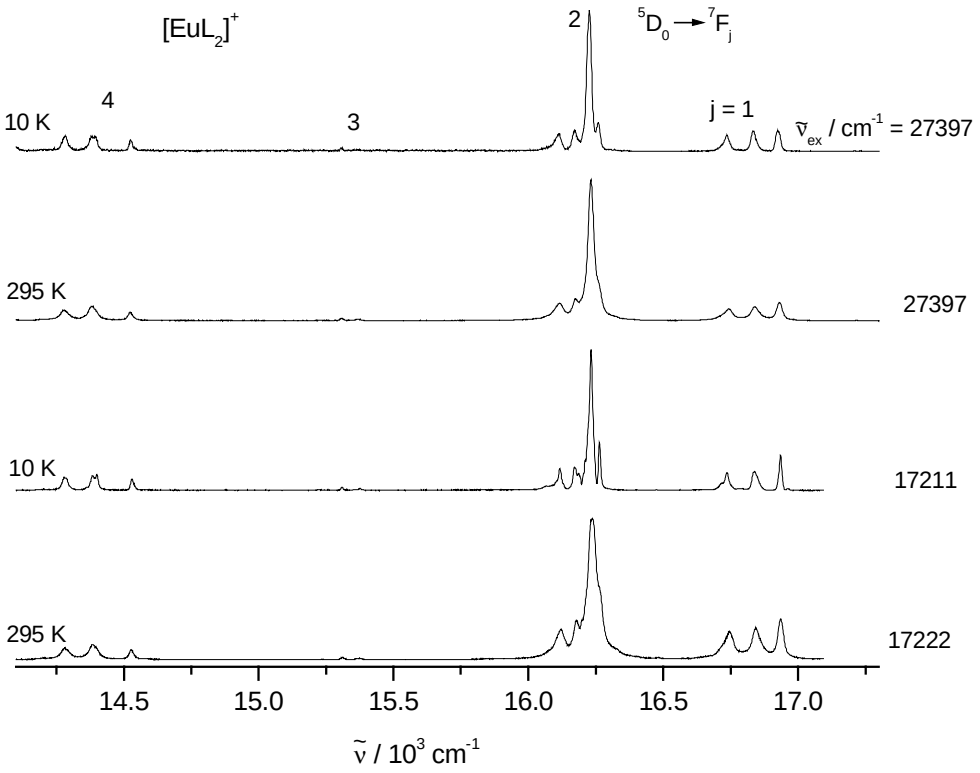

Figure **S 2**: Emission spectra of the $[EuL_2]$(Otf) complex at 10 and 295 K upon broad band and selective excitation.

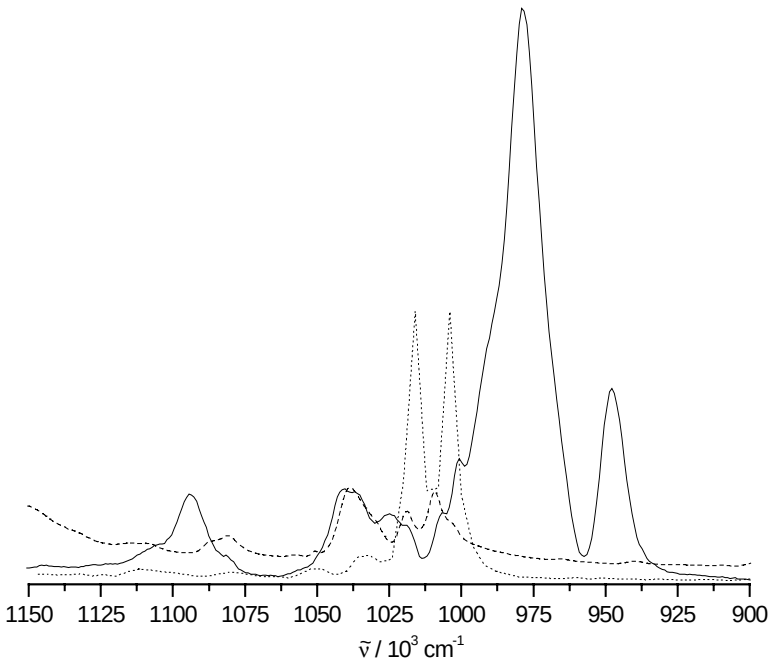

Figure **S 3** : Comparison between emission ($\tilde{\nu}$ = 17221 cm^{-1}, solid line), IR (dashed line) and Raman (dotted line) spectra of spectra of the $[EuL_2]^+$complex in the energy range of the $^5D_0 \rightarrow {}^7F_2$.

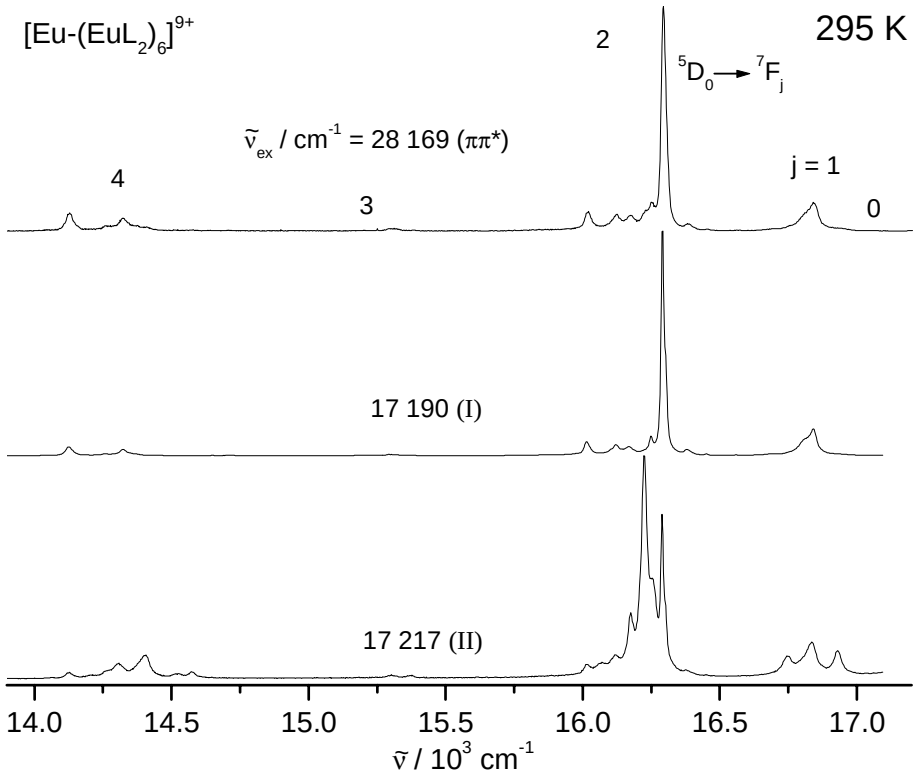

Figure **S 4** : Emission spectra of the $[Eu\subset(EuL_2)_6](Otf)_9$ complex at 295 K, upon broad band and selective excitation.

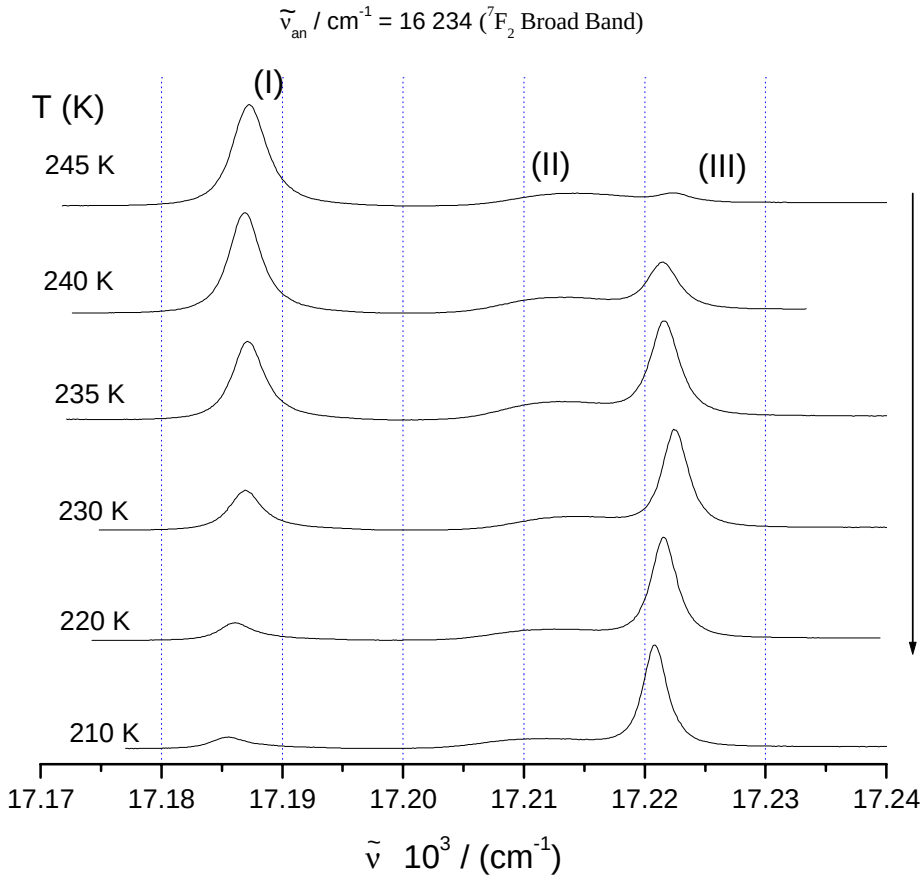

Figure **S 5 :** Excitation spectra from 245 to 210 K of the $[Eu\subset(EuL_2)_6](Otf)_9$ complex, upon monitoring the $Eu(^5D_0\rightarrow{}^7F_{2,})$ transition.

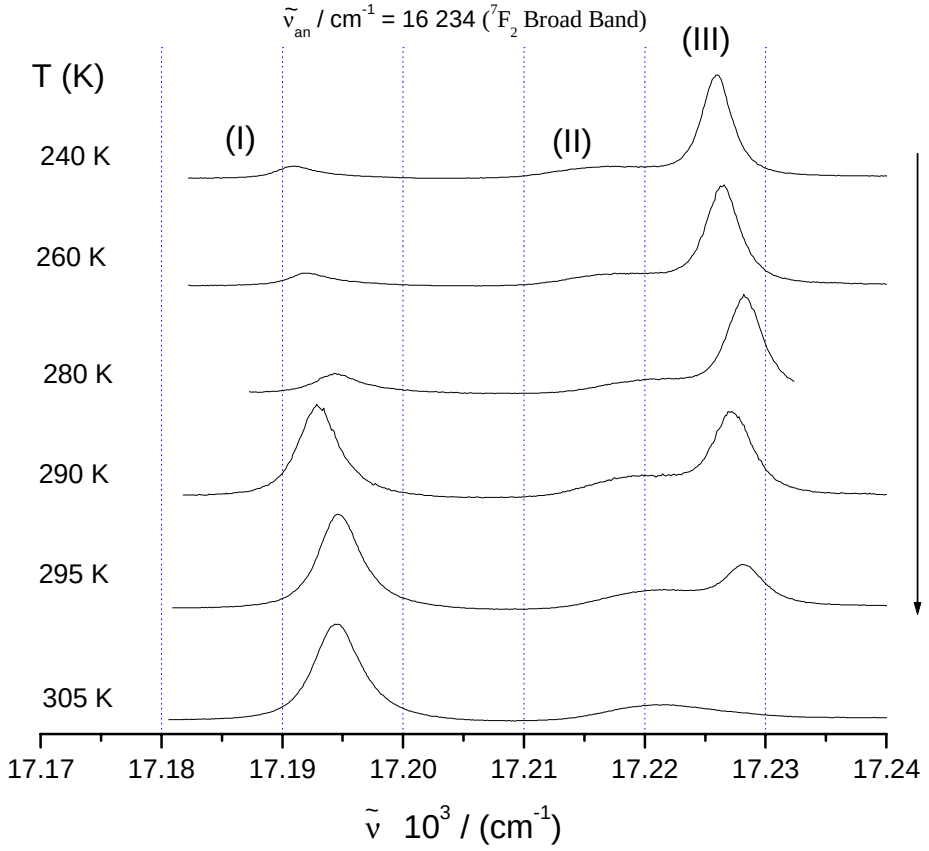

Figure **S 6 :** Excitation spectra from 240 to 305 K of the $[Eu\subset(EuL_2)_6](Otf)_9$ complex, upon monitoring the $Eu(^5D_0\rightarrow{}^7F_{2,})$ transition.

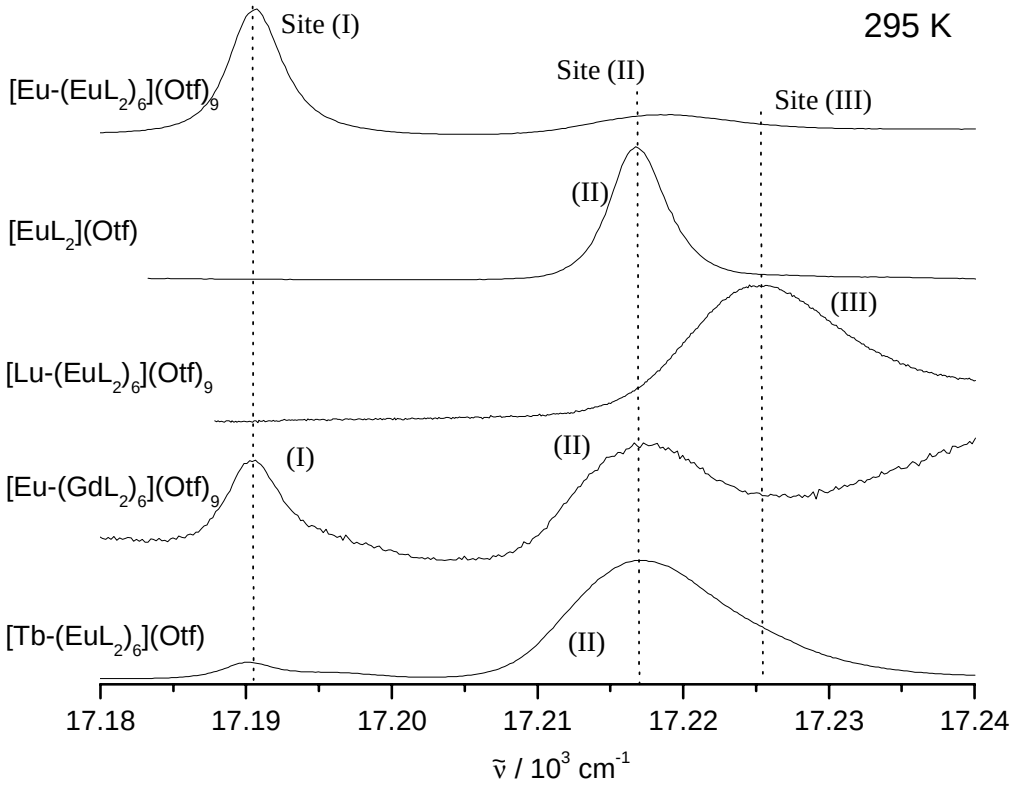

Figure **S 7 :** Excitation spectra at 295 K of the $[Ln\subset(LnL_2)_6](Otf)_9$ complexes (Ln = Eu, Lu, Tb, Gd), upon monitoring the $Eu(^5D_0\rightarrow{}^7F_{2,})$ transition.

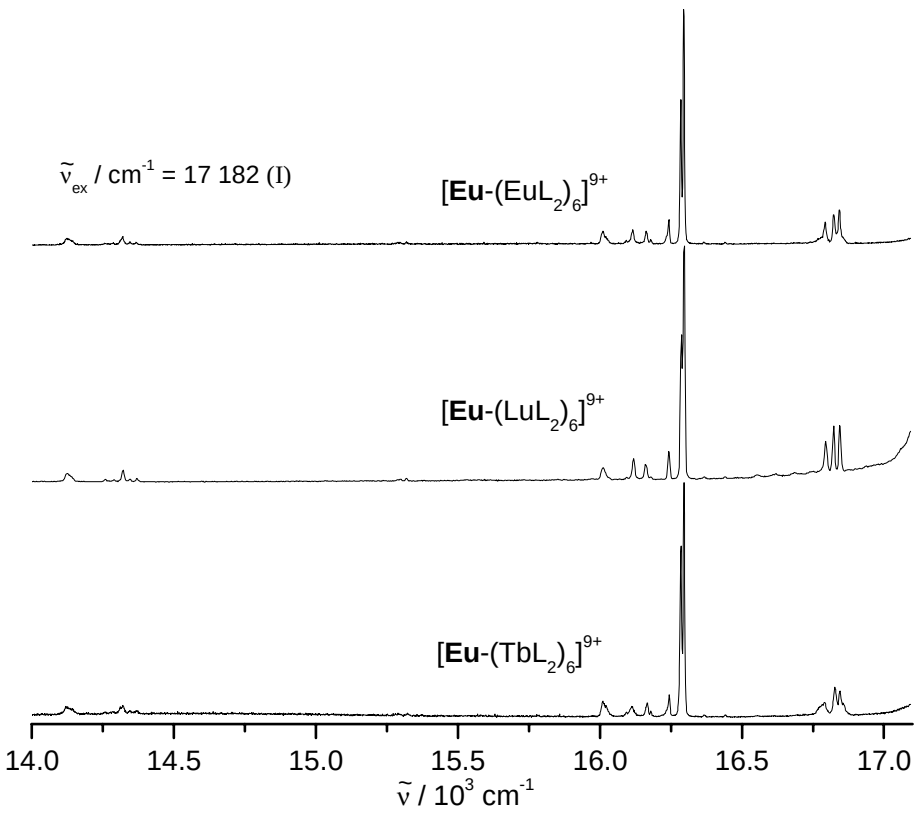

Figure **S 8** : Emission spectra of the $[Ln\subset(LnL_2)_6](Otf)_9$ complexes (Ln = Eu, Lu, Tb), at 10 K, upon selective excitation of site I.

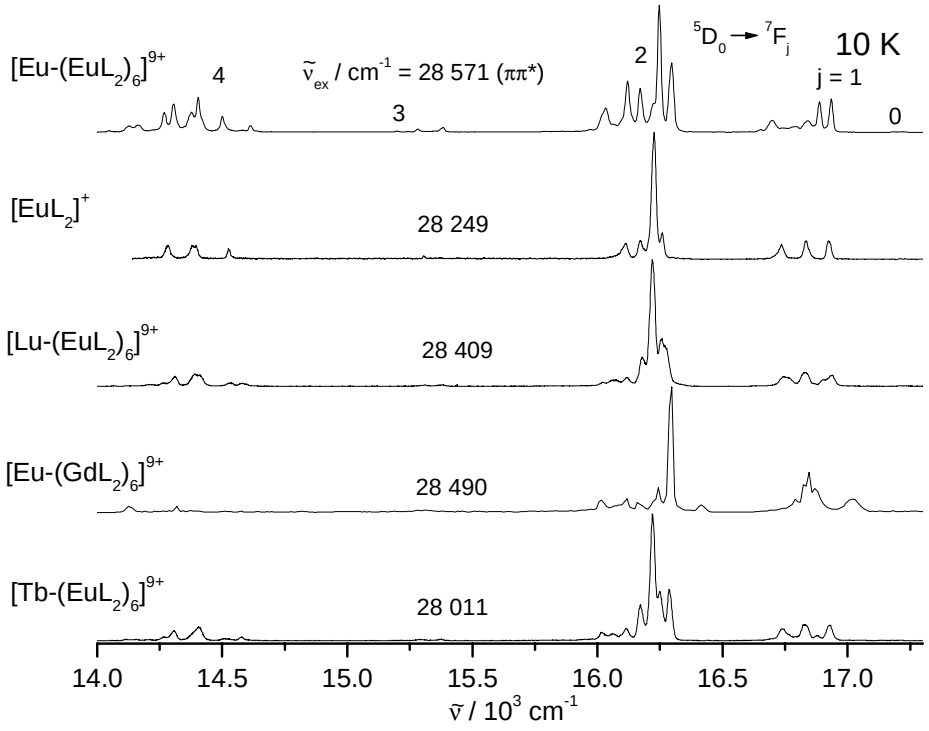

Figure **S 9** : Emission spectra of the $[Ln\subset(LnL_2)_6](Otf)_9$ complexes (Ln = Eu, Lu, Tb, Gd), at 10 K, upon broad band excitation.