

Supporting Information

Hybrid Lanthanide Complexes Based on a Novel β -Diketone Functionalized Polyhedral Oligomeric Silsesquioxane (POSS) and Their Nanocomposites with PMMA *via* in Situ Polymerization

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Table S1. Binding energy values of C^{1s}, O^{1s}, N^{1s}, S^{2p}, Tb^{4d} of POSS_Tb_3, POSS_dendrimer and Tb(NO₃)₃·6H₂O

Condition	C ^{1s} (eV)	O ^{1s} (eV)	N ^{1s} (eV)	S ^{2p} (eV)	Tb ^{4d} (eV)
POSS_Tb	284.7	532	407	162.7	153.3
Tb(NO ₃) ₃ ·6H ₂ O	284.8	533	408	162.7	151.7

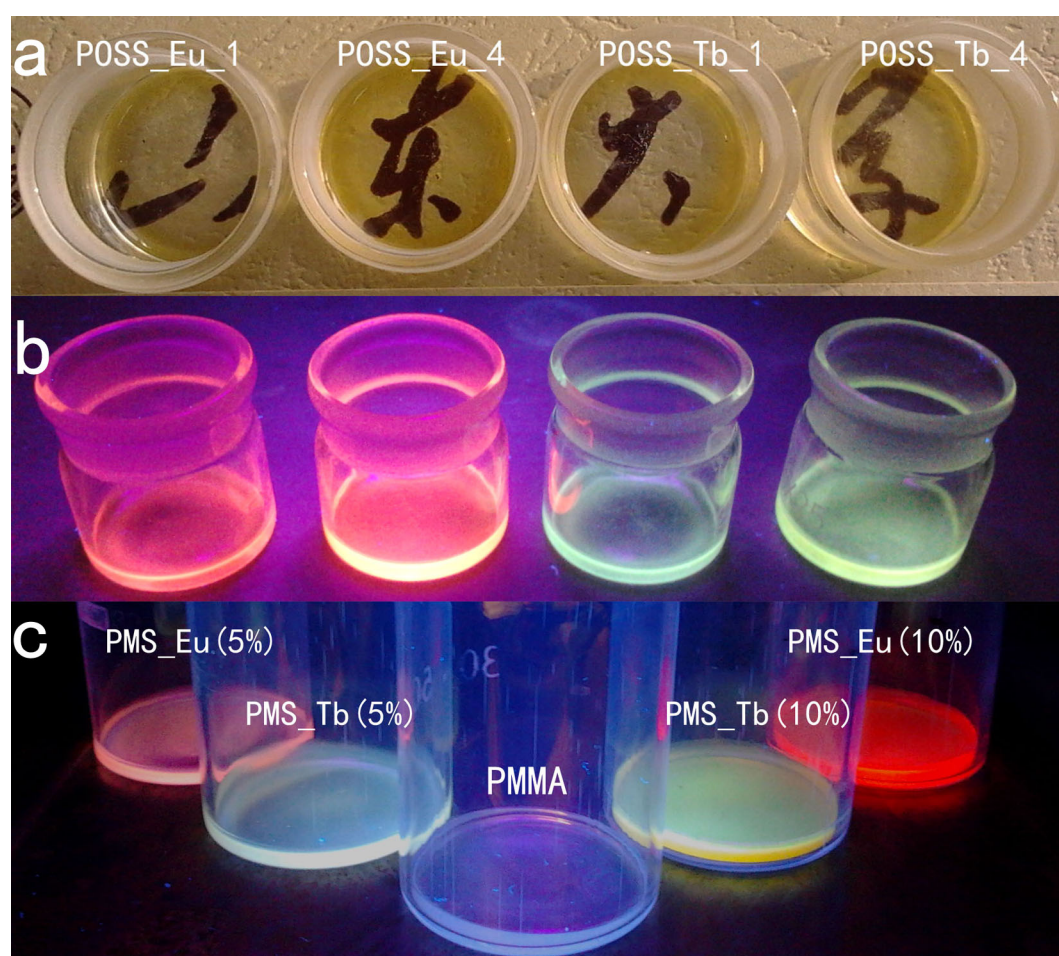


Figure S1. (a) Photograph of POSS_Ln (Eu³⁺ and Tb³⁺) complexes. (b), (c) Fluorescence images of POSS_Ln and PMS_Ln under 365 nm UV light.

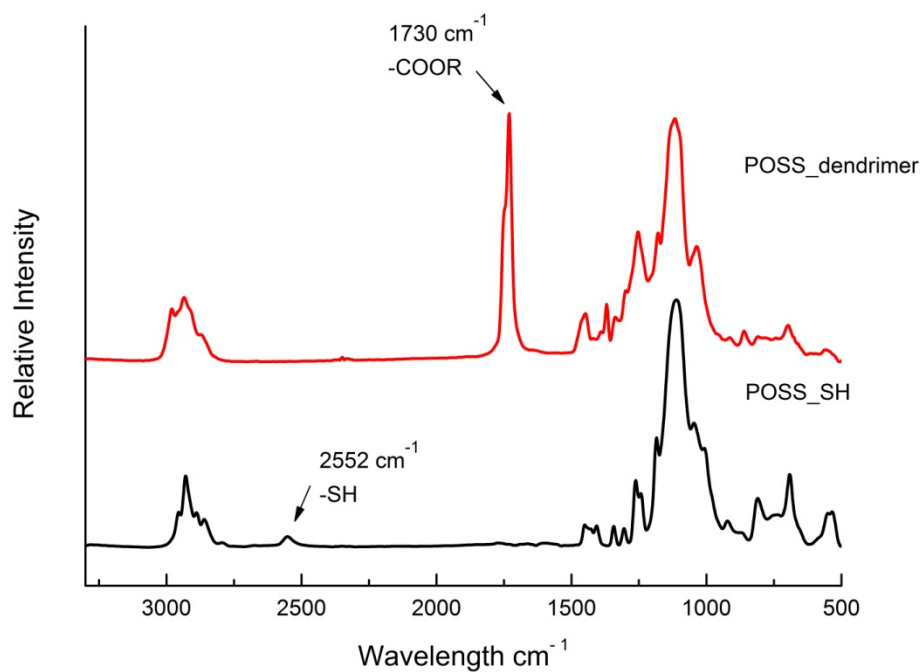


Figure S2. FT-IR spectra of POSS_dendrimer and POSS_SH.

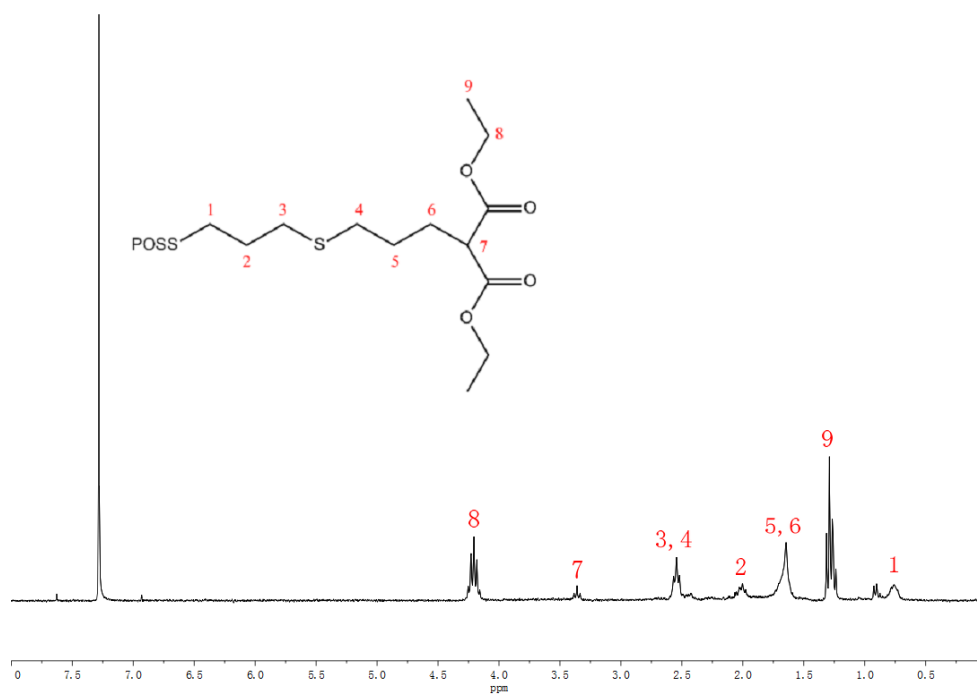


Figure S3. ^1H NMR spectra of POSS_dendrimer

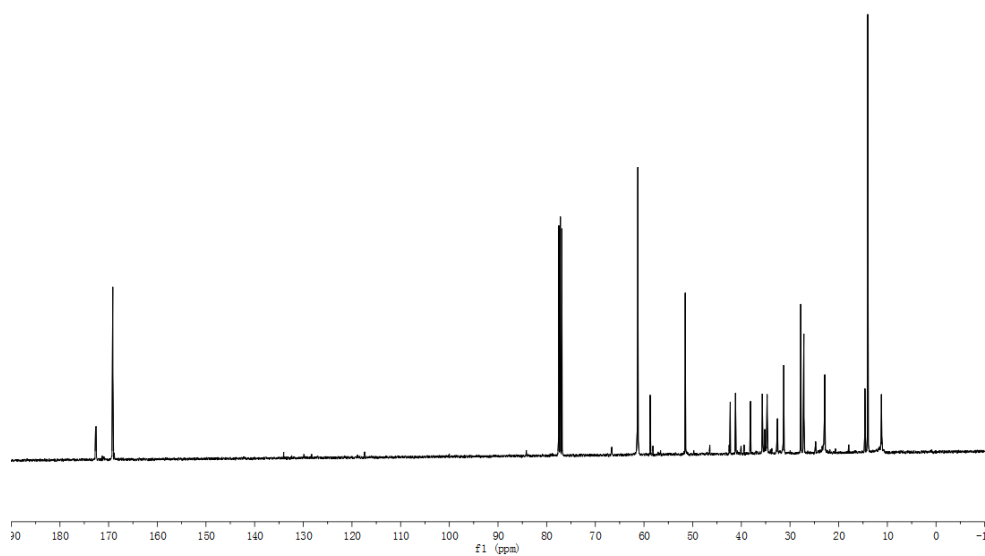


Figure S4. ^{13}C NMR spectra of POSS_dendrimer.

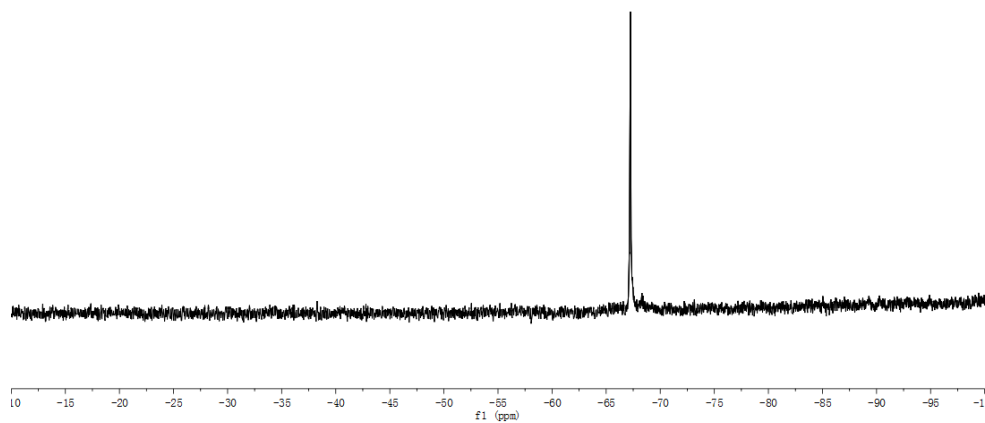


Figure S5. ^{29}Si NMR spectra of POSS_dendrimer.

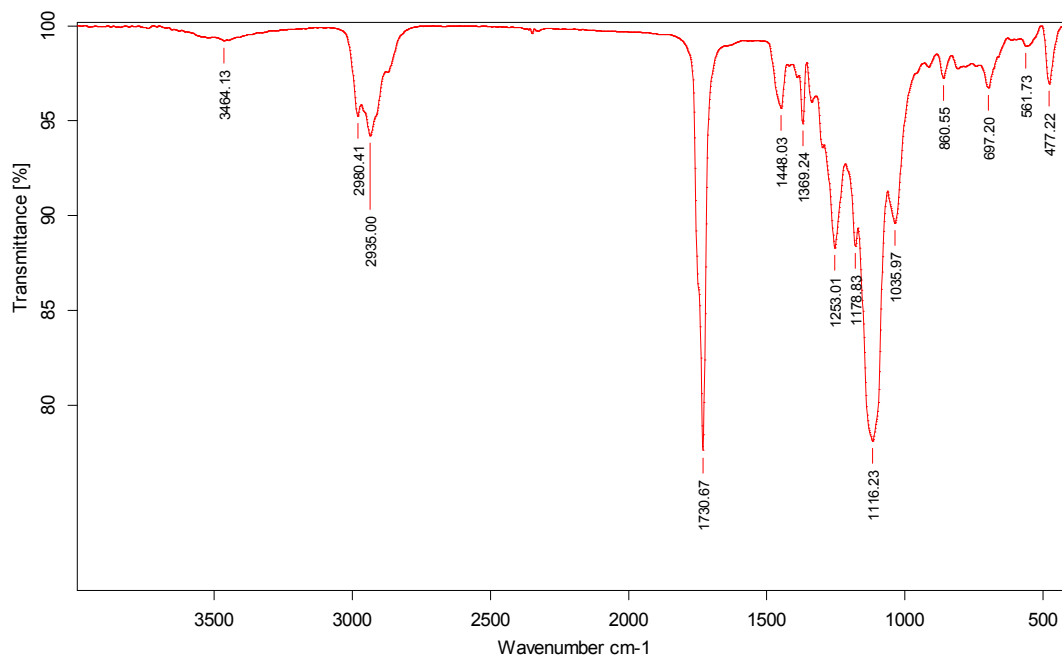
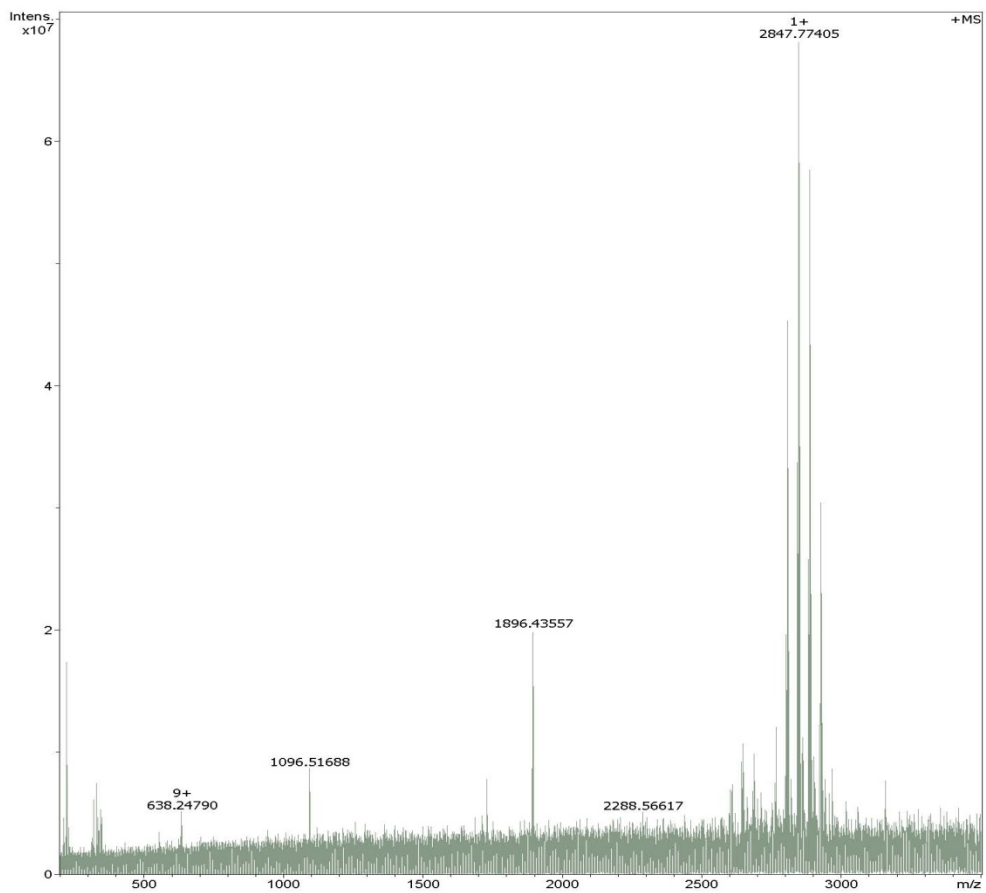


Figure S6. FT-IR spectra of POSS_dendrimer.

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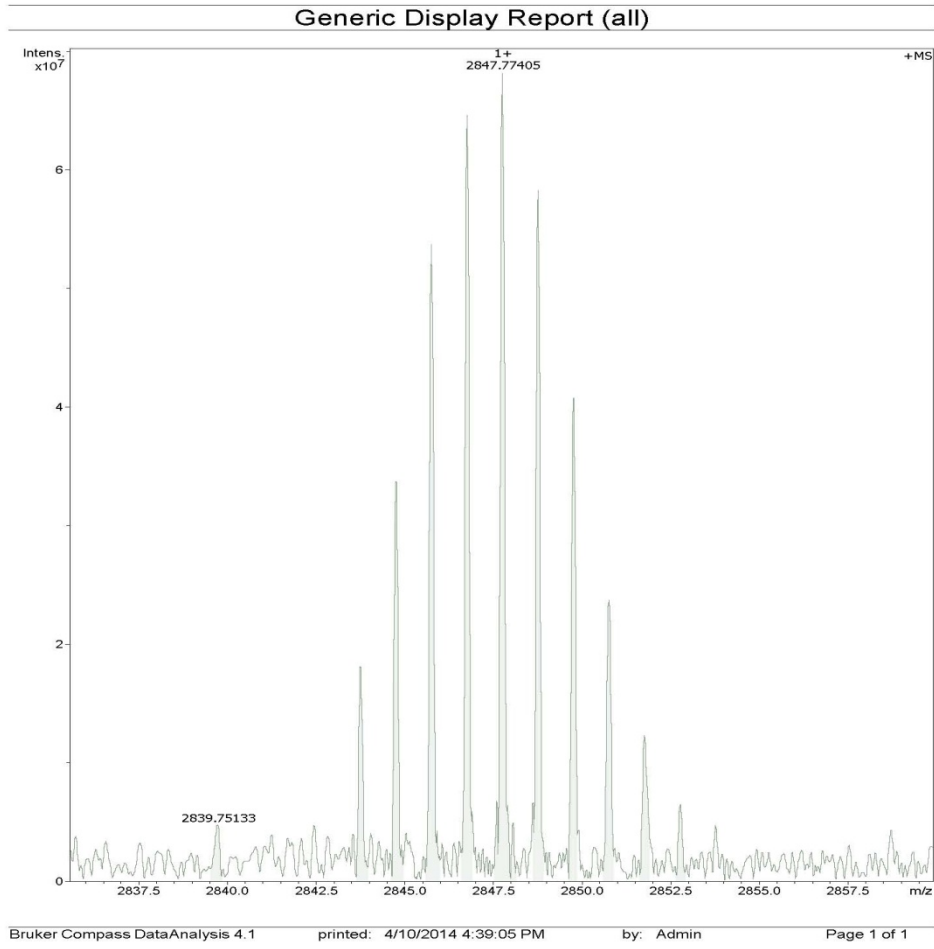


Figure S7 MALDI-FTMS spectrum of POSS_dendrimer

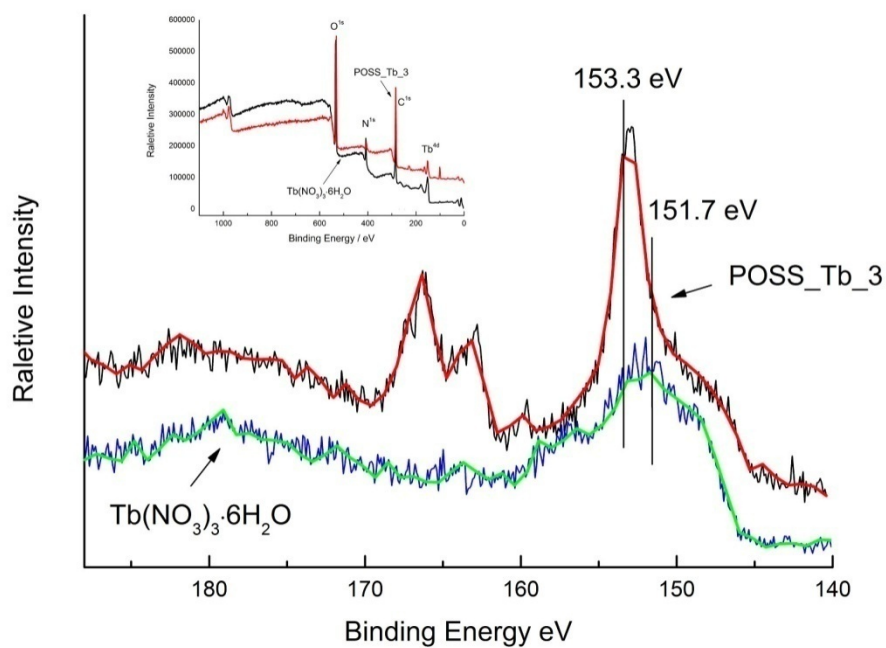


Figure S8. XPS image of Tb^{4d} in POSS_Tb_3 and Tb(NO₃)₃·6H₂O.

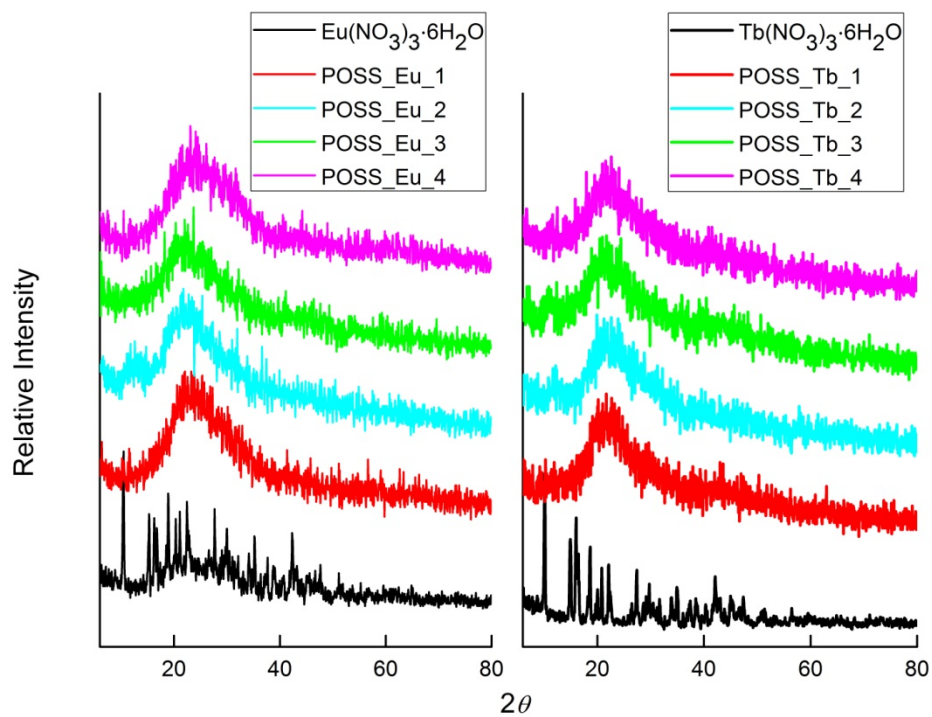


Figure S9. PXRD figures of POSS_Ln (Eu³⁺ and Tb³⁺).

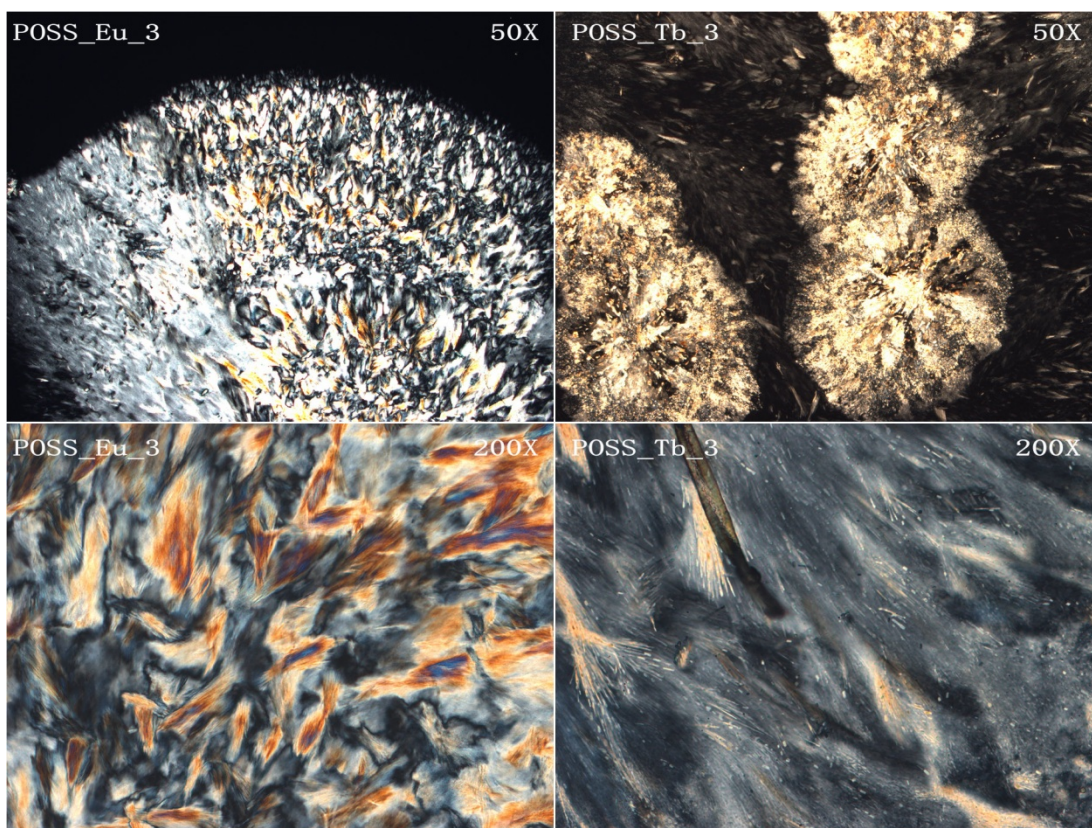


Figure S10. POM images of POSS_Ln_3 (Eu³⁺ and Tb³⁺).

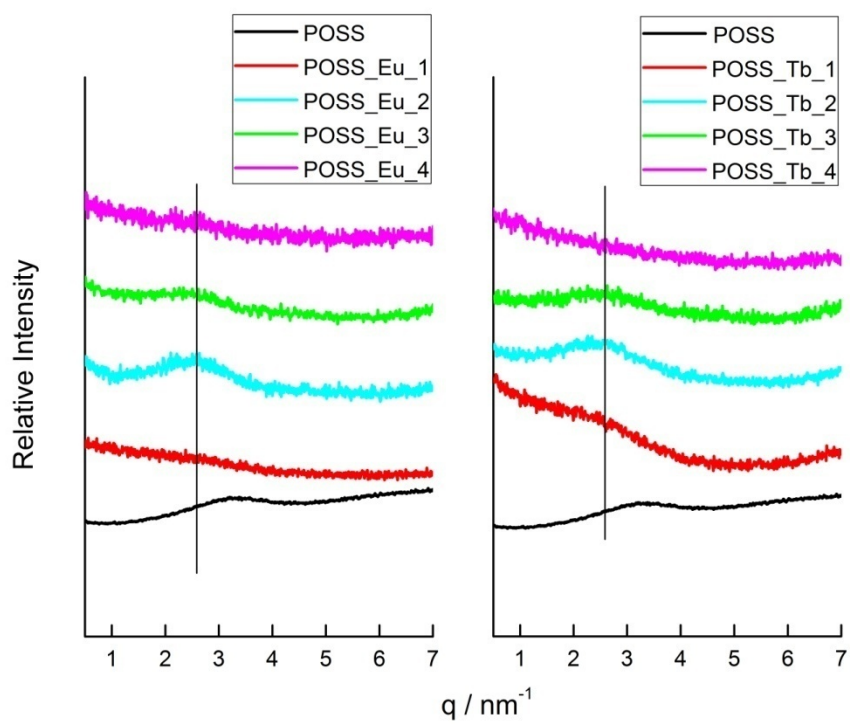


Figure S11. SAXS figures of POSS_Ln (Eu³⁺ and Tb³⁺).

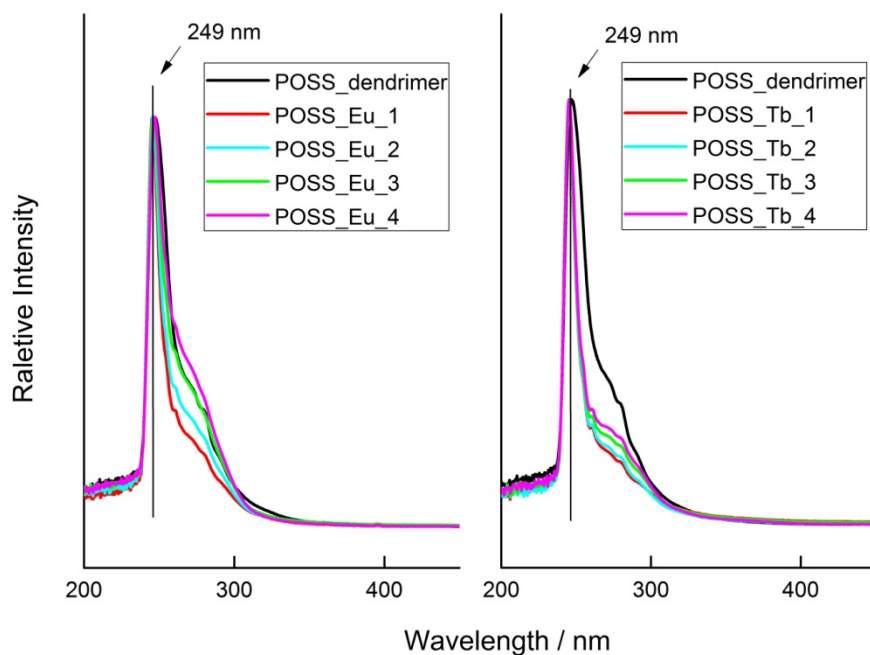


Figure S12. UV spectra of POSS_Ln (Eu³⁺ and Tb³⁺) in THF solution (1.0×10^{-4} M).

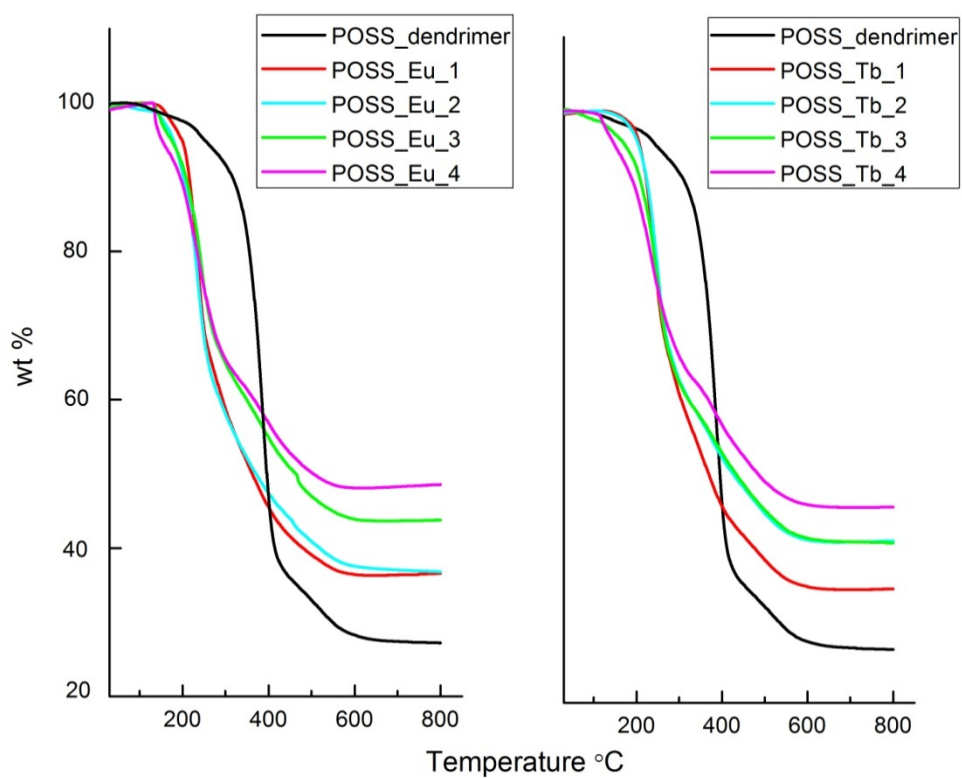


Figure S13. Thermal gravimetric analysis of POSS_Ln (Eu³⁺ and Tb³⁺) complexes.

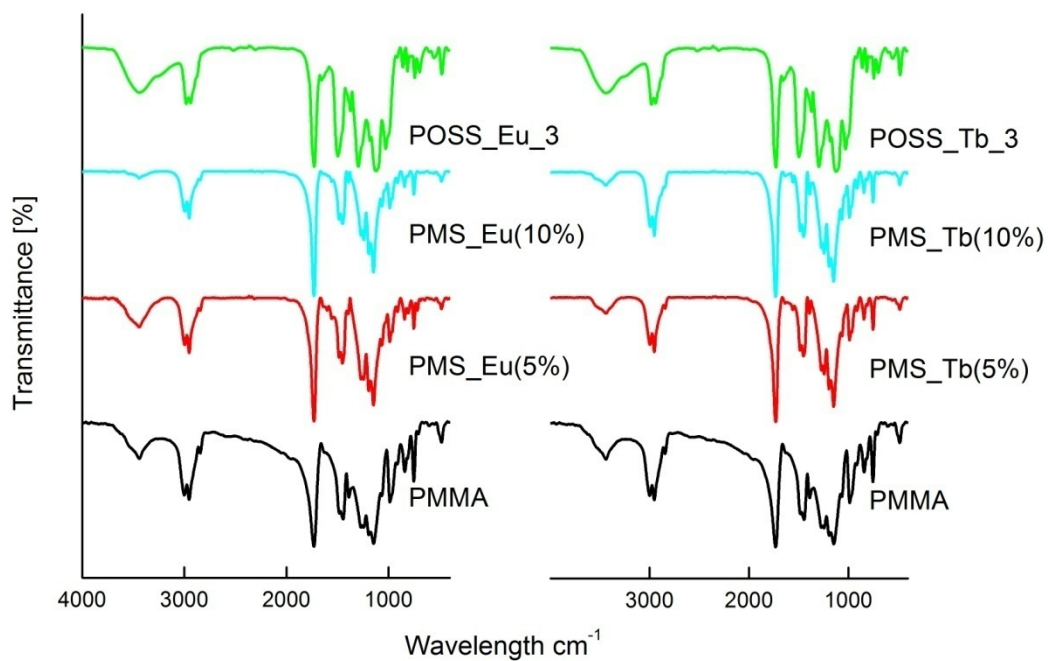


Figure S14. FT-IR spectroscopy of PMMA nanocomposites.

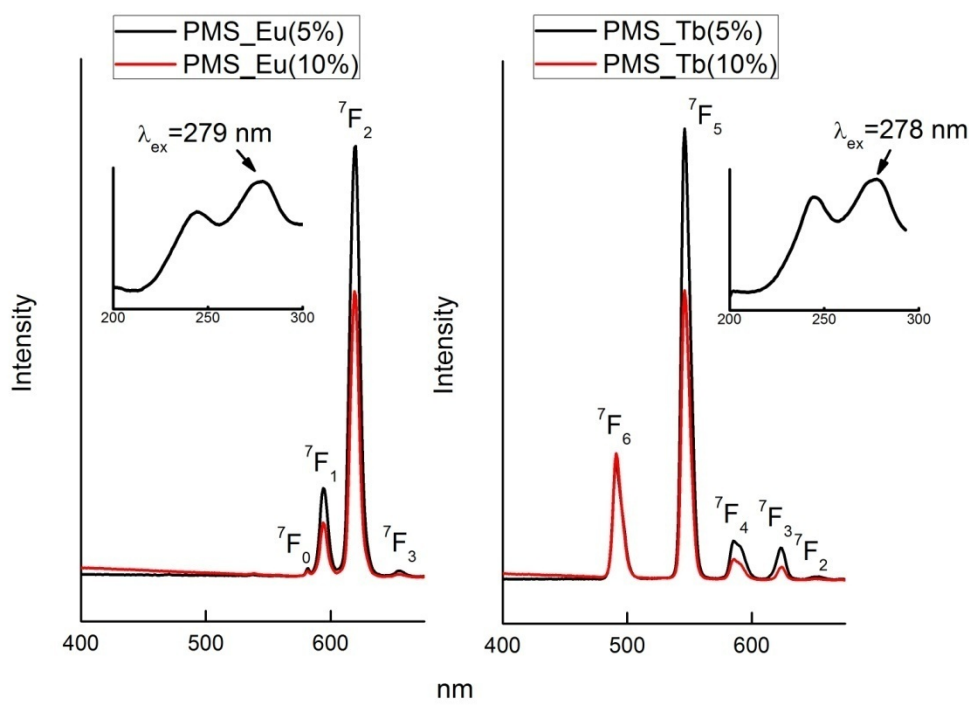


Figure S15. Emission spectra of PMS_Ln (Eu³⁺ and Tb³⁺) in solid state.