Electronic Supplementary Material (ESI) for New Journal of Chemistry.

Improving the emission quantum yield in dinuclear Eu(III) and Tb(III) complexes with 2-fluorobenzoate.

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SUPPLEMENTARY INFORMATION:

Crystal Data	**Compound 1**
Formula	$C_{56}H_{38}Eu_2F_8O_{18}$
FW [g/mol]	1454.78
Crystal System	triclinic
Space Group	P-1
a [Å]	9.095(8)
b [Å]	11.378(10)
c [Å]	13.659(12)
α[deg]	110.68(3)
β [deg]	93.12(3)
γ [deg]	92.45(3)
V [Å^3]	1317.6(2)
Z	1
T(K)	100(2)
λ(Mo kα) (Å)	0.71073
D_{calc} [g cm^{-3}]	1.833
μ(Mo Kα) [mm^{-1}]	2.464
R	0.0199
wR_2	0.0467

Table S1. Crystal data and single crystal X-Ray diffraction measurement details for compound **1**.

Eu1-O1	2.586(13)	Eu1-O6_a	2.463(14)
Eu1-O2	2.430(13)	Eu1-O7	2.481(13)
Eu1-O3	2.354(13)	Eu1-O9	2.427(13)
Eu1-O4	2.356(13)	Eu1---Eu1	3.964(3)
Eu1-O5	2.638(13)	O1-Eu1-O2	51.69(4)
Eu1-O5_a	2.638(13)	Eu-O_a-Eu	105.19(5)

Table S2. Selected bond lengths (Å) and angles (º) for compound **1**. The symmetry transformation used to generate equivalent atoms is _a: -x+1,-y+1,-z+2

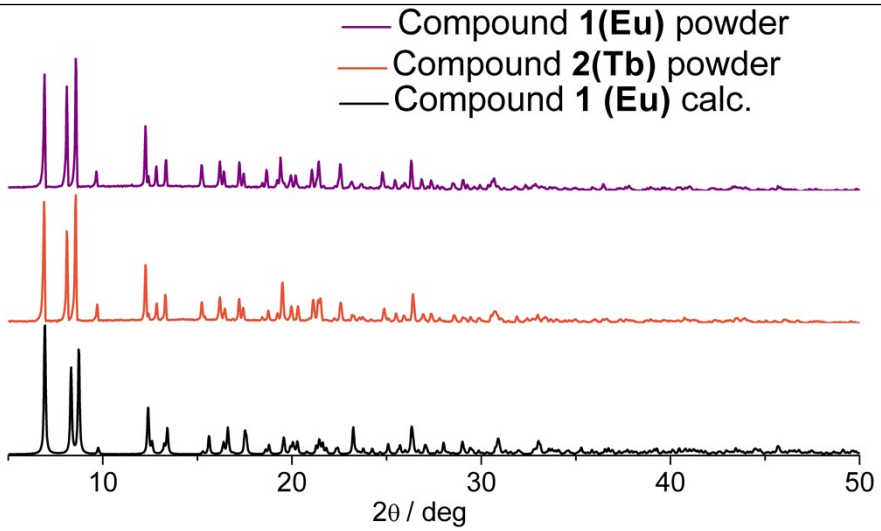
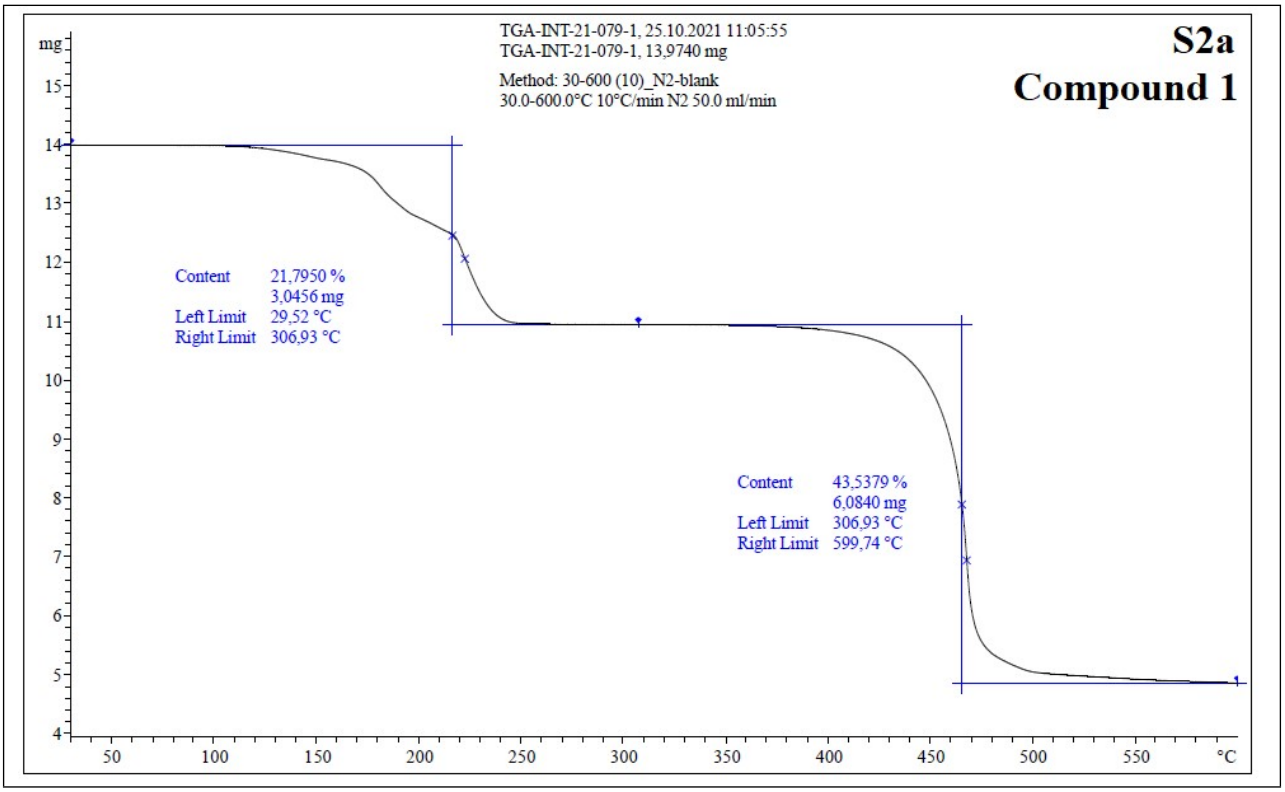
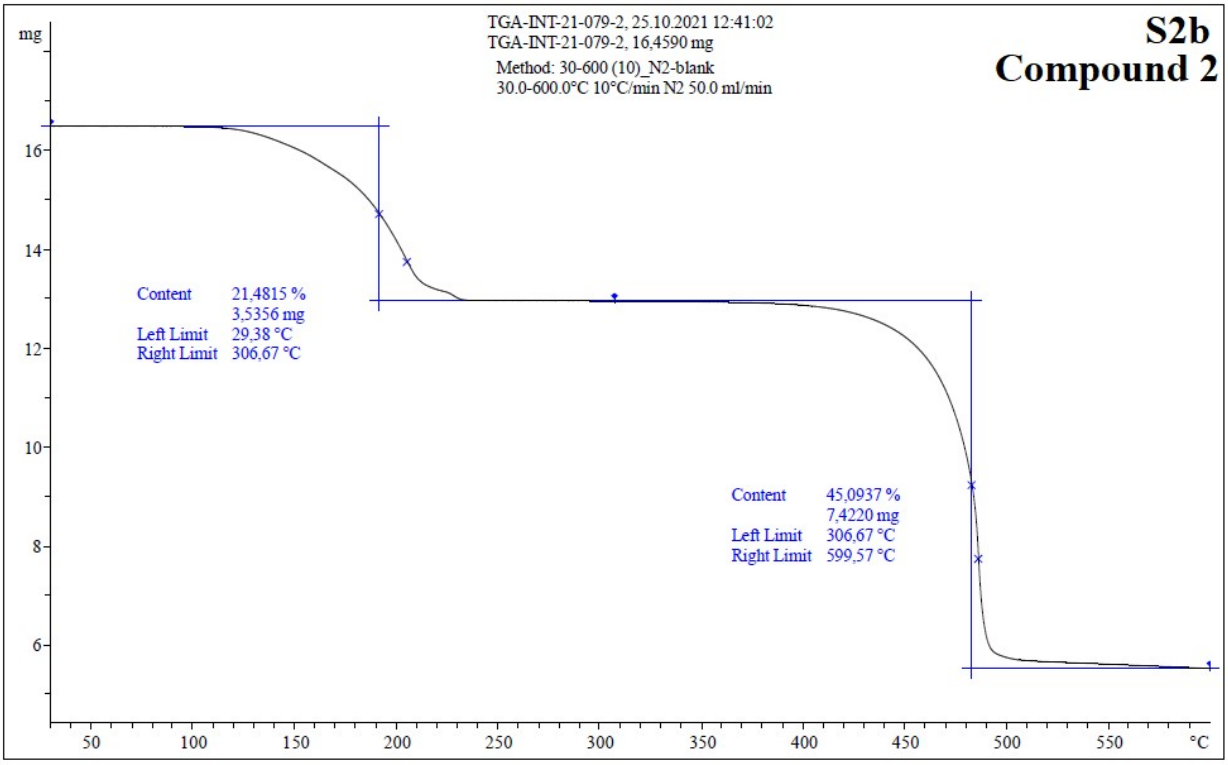
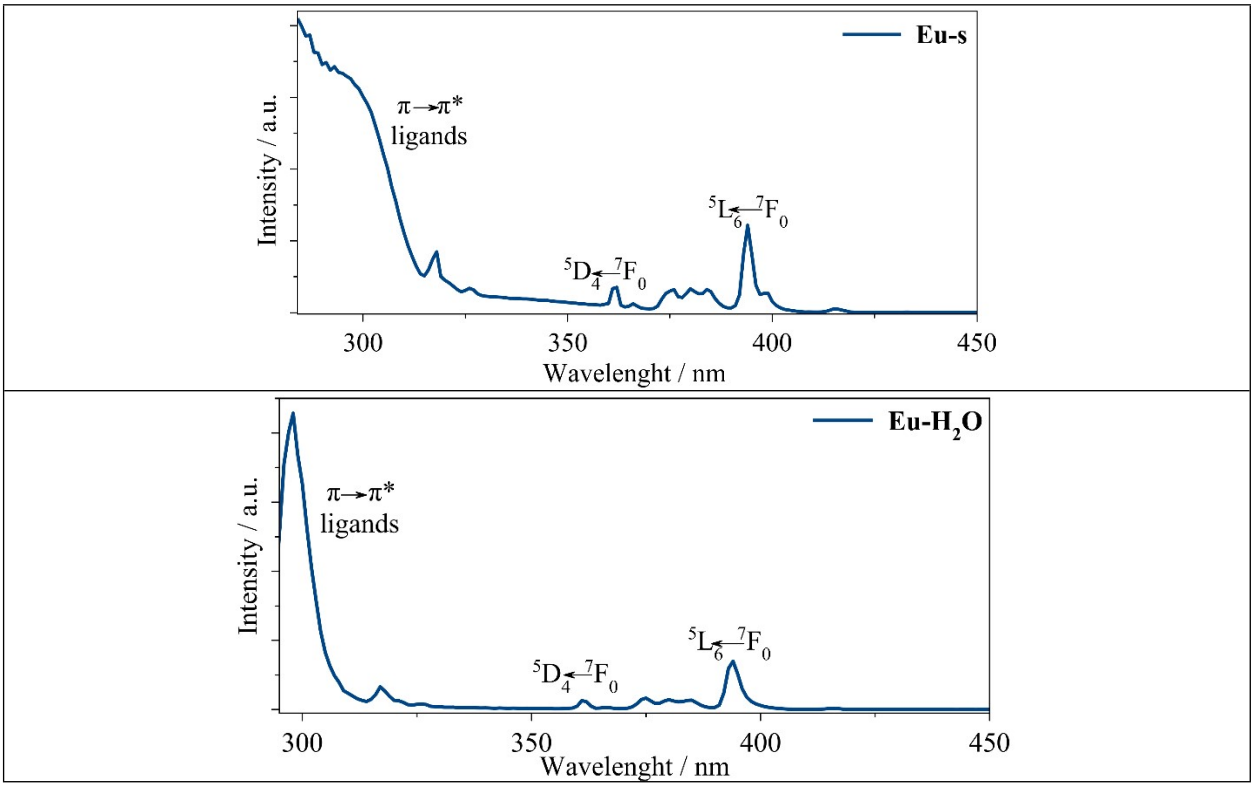


Figure S1. Calculated powder pattern of the single crystal (black line) compared with the experimental powder X-ray diffraction of the phase pure compounds (orange and purple lines). Single crystal X-Ray diffraction was measured at 100 K and Powder X-Ray diffraction was measured at room temperature.





Figures S2a and S2b. Thermogravimetry measurements for compounds 1 (Sa1) and 2 (Sa2). The measurement is performed in the 30–600 ºC temperature range and under N_2 atmosphere, with a heating rate of 10 ºC min^{-1}



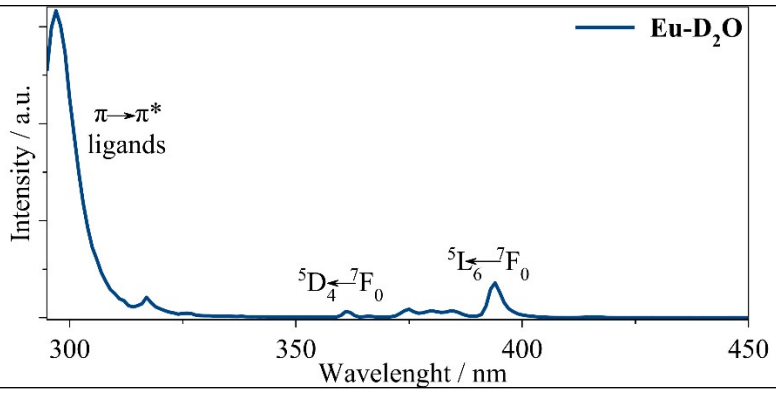


Figure S3. Excitation spectra of compound **1** in the microcrystalline sample (Eu-s), dissolved in water (Eu-H_2O) and in deuterium oxide (Eu-D_2O). Excitation spectra were recorded at λ_{em} of 617 nm ($^5D_0 \rightarrow {}^7F_2$).

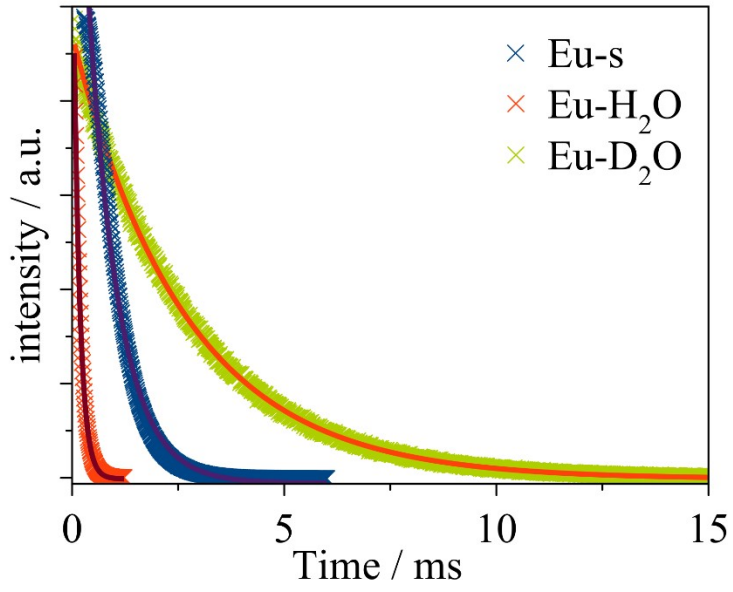


Figure S4. Time decay curves at r.t. for compound **1** in the microcrystalline sample (Eu-s), dissolved in water (Eu-H_2O) and in deuterium oxide (Eu-D_2O). Thick and continuous lines represent the monoexponential fittings of the curves. ($I(t) = I_0 \exp(-t/\tau_{obs})$)

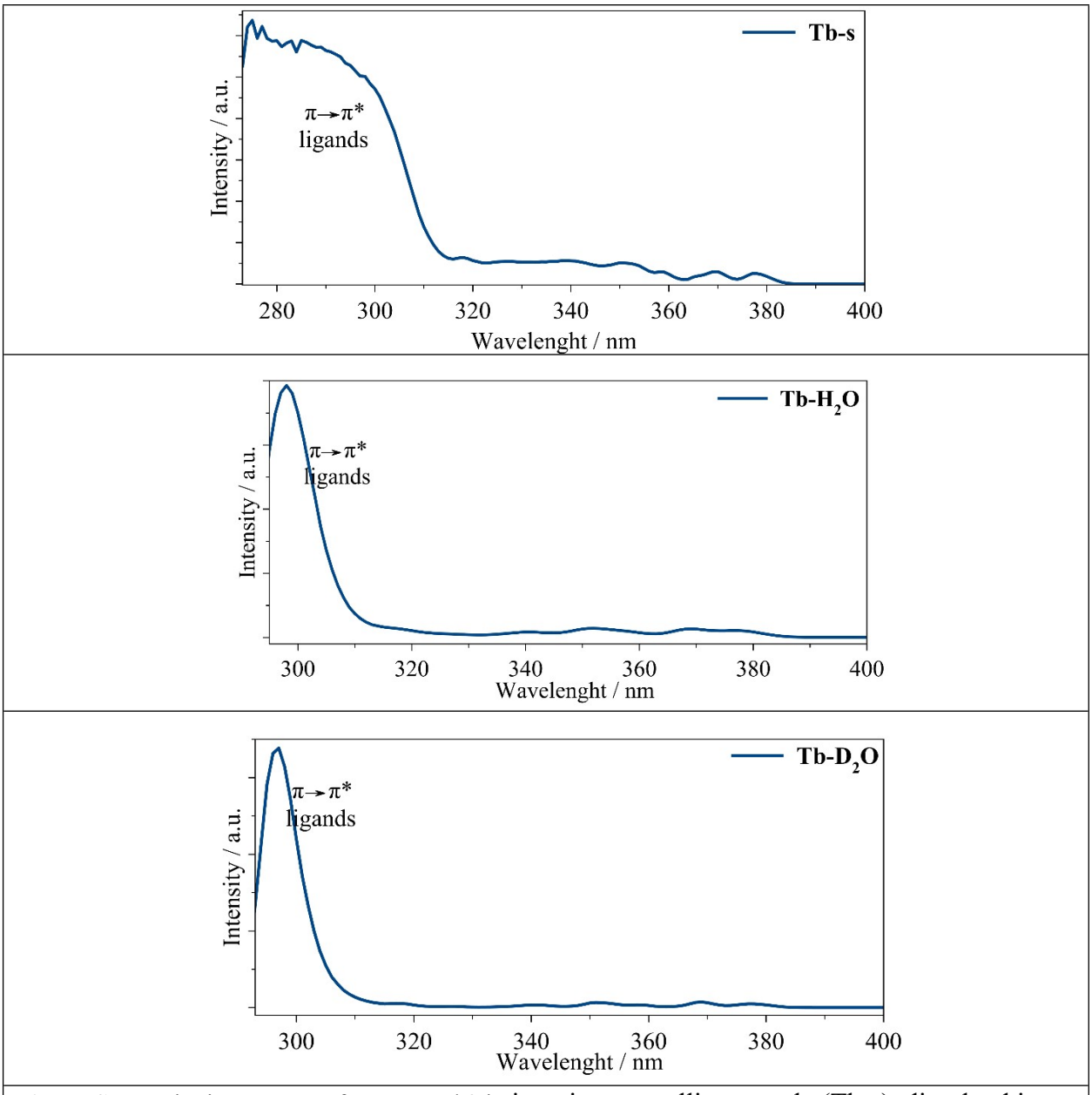


Figure S5. Excitation spectra of compound **2** in in microcrystalline sample (Tb-s), dissolved in water (Tb-H_2O) and in deuterium oxide (Tb-D_2O). Excitation spectra were recorded at the λ_{em} of 543 nm for Tb-s and at 548 nm ($^5D_4 \rightarrow {}^7F_5$) for the aqueous solutions Tb-H_2O and Tb-D_2O.

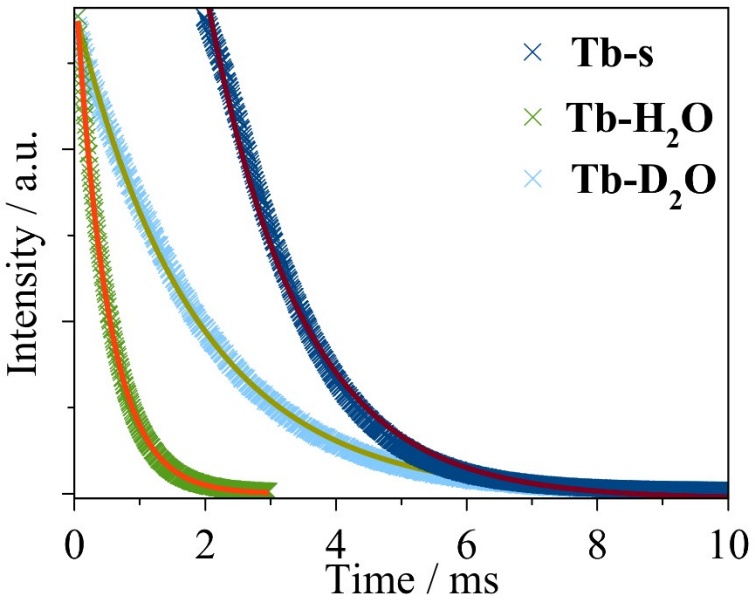


Figure S6. Time decay curves at r.t. for compound **2** in microcrystalline sample (Tb-s), dissolved in water (Tb-H_2O) and in deuterium oxide (Tb-D_2O). Thick and continuous lines represent the monoexponential fittings of the curves. ($I(t) = I_0 \exp(-t/\tau_{obs})$)

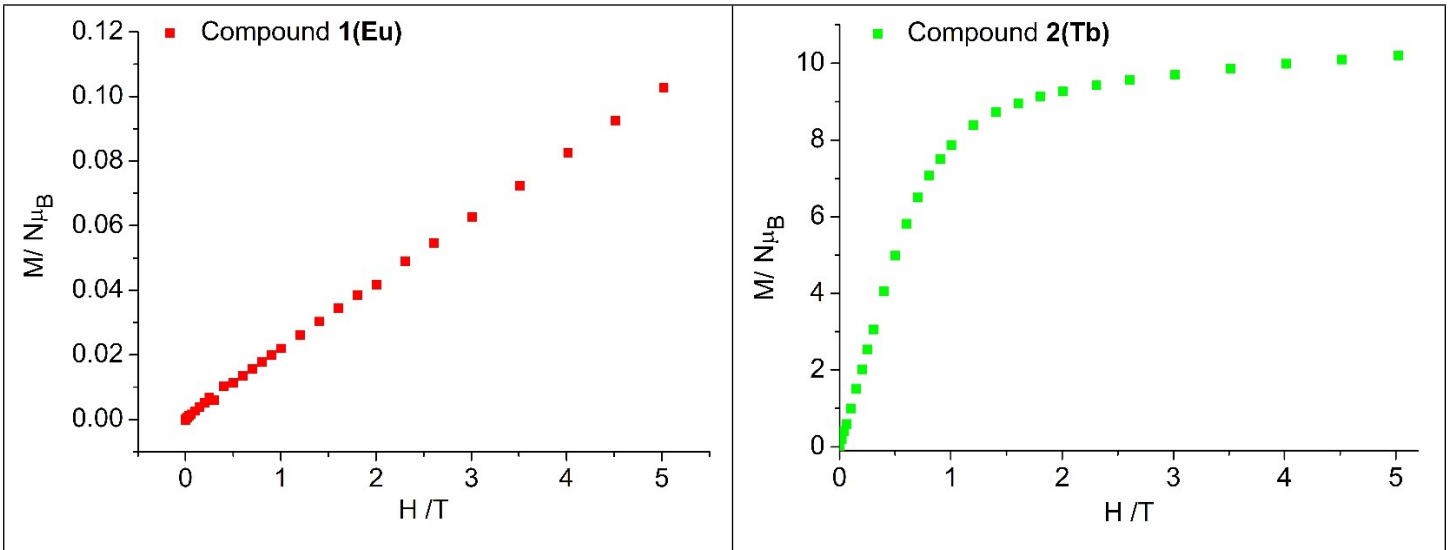


Figure S7. Magnetization dependency in front of the dc magnetic field at 2K for compounds **1**(red) and **2**(green)