SUPPORTING INFORMATIONS

Influence of photo-induced electron transfer on lanthanide-based coordination polymers luminescence : A comparison between two pseudo-isoreticular molecular networks.

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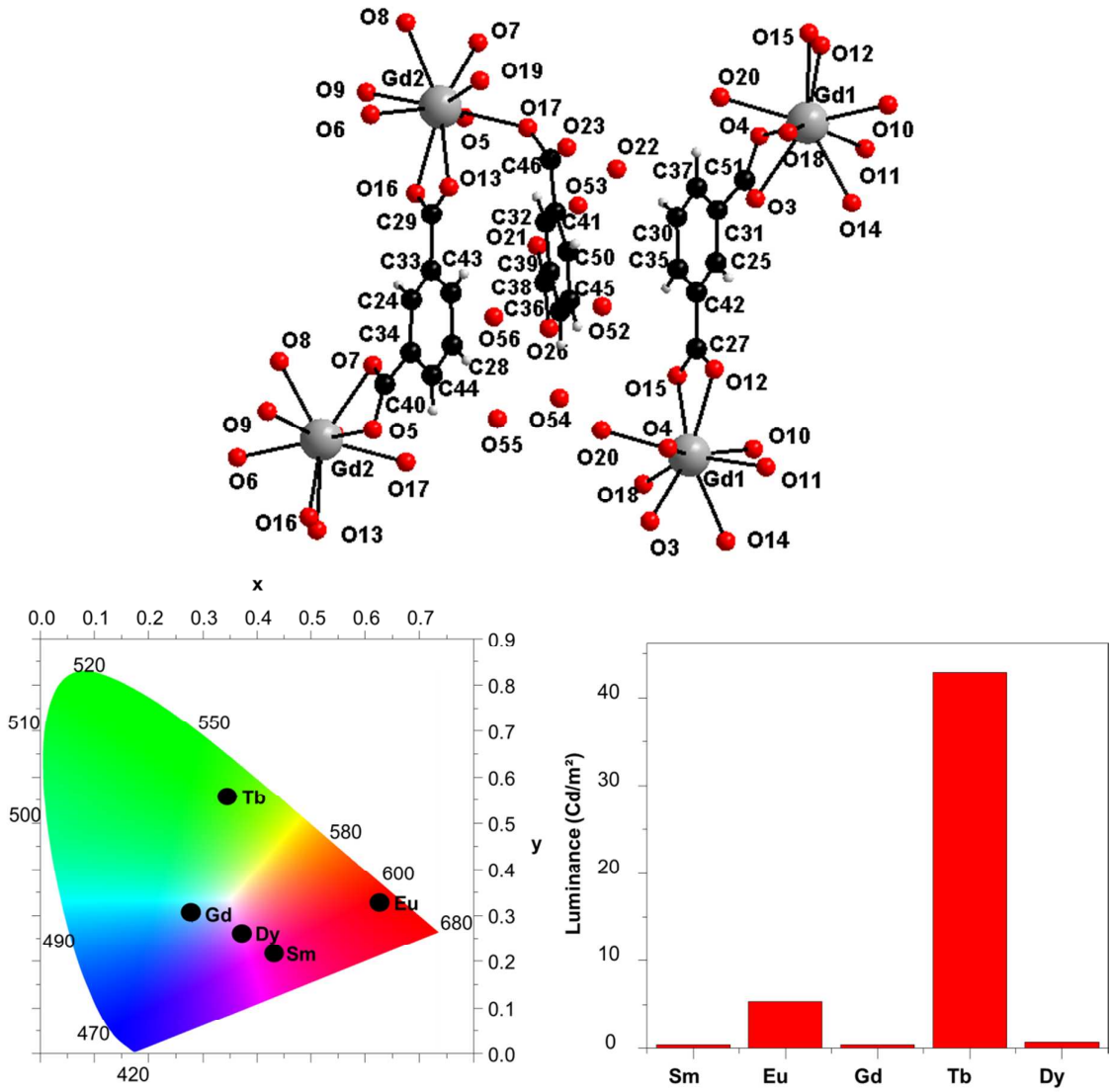

Figure S1 : Top : Projection view of an extended asymmetric unit of $[Gd_2(ip)_3(H_2O)_9,6H_2O]_\infty$ (Redrawn from reference [40]). This compound crystallizes in the monoclinic system, space group P21/a (n°14) with a = 17.4249(2) Å, b = 10.9148(1) Å, c = 20.7216(2) Å, β = 113.1694(6)° and Z = 4. CCDC-605789. Bottom : Colorimetric (left) and luminance (right) data upon UV irradiation (λ_{exc} = 312nm) of $[Ln_2(ip)_3(H_2O)_9,6H_2O]_\infty$ with Ln = Sm, Eu, Gd, Tb and Dy. Numerical results are listed in table S1.

Table S1. Colorimetric and luminance data for $[Ln_2(ip)_3(H_2O)_9,6H_2O]_\infty$ with Ln = Sm, Eu, Gd, Tb and Dy

	Sm	Eu	Gd	Tb	Dy
x	0.43(1)	0.63(1)	0.28(1)	0.35(1)	0.37(1)
y	0.22(1)	0.33(1)	0.30(1)	0.56(1)	0.26(1)
Luminance *	0.4(1)	5(1)	0.4(1)	43(1)	0.7(1)

* The values are expressed in Cdm^{-2} and represent the luminous flux weighted by the spectral response of human eye.

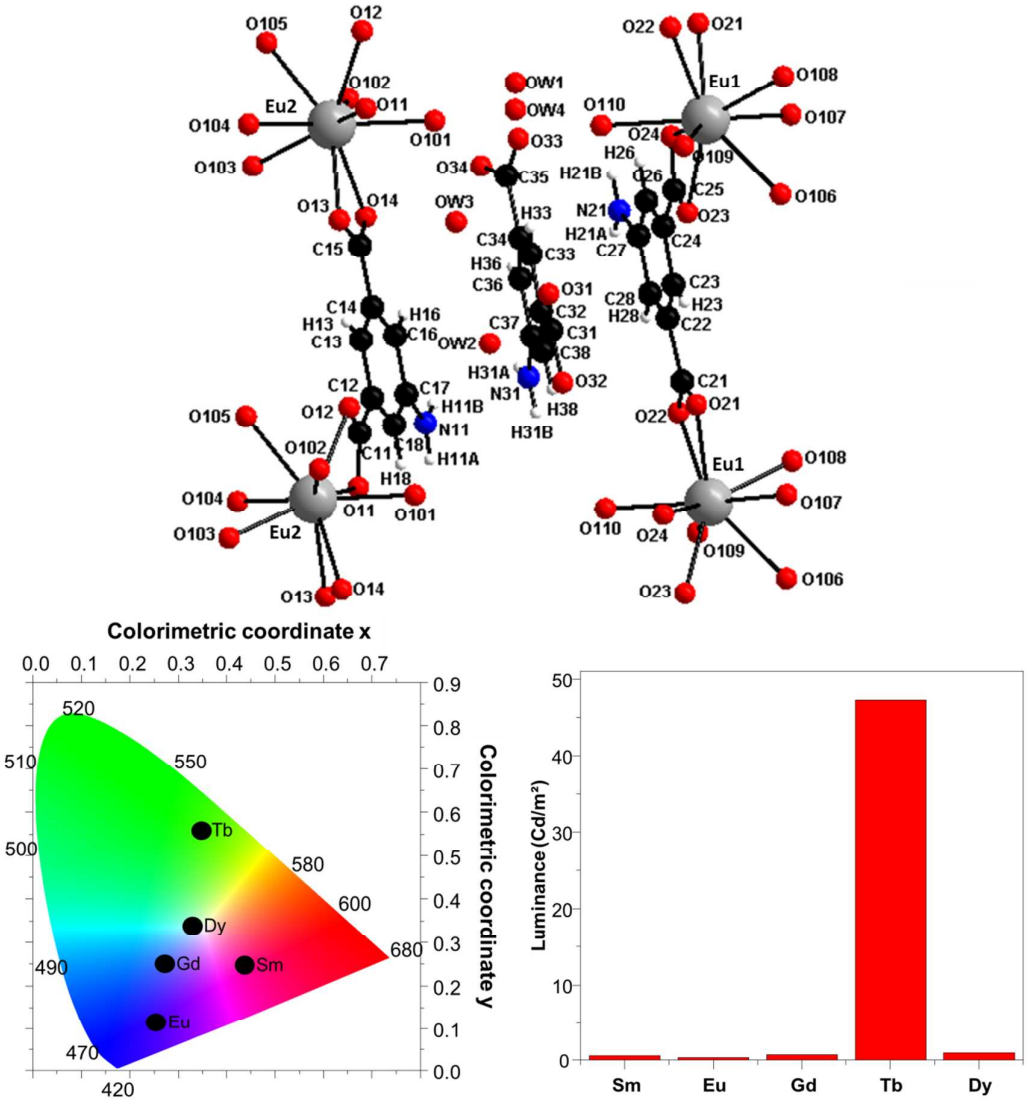

Figure S2 : Top : Projection view of an extended asymmetric unit of $[Eu_2(aip)_2(H_2O)_{10},(aip),4H_2O]_\infty$ (Redrawn from reference [41]). This compound crystallizes in the monoclinic system, space group Pn (n°7) with a = 11.3427(2) Å, b = 10.6663(1) Å, c = 15.1639(9) Å, β = 97.8998(9)° and Z = 2. CCDC-802305. Bottom : Colorimetric (left) and luminance (right) data upon UV irradiation (λ_{exc} = 365nm) of $[Ln_2(aip)_3(H_2O)_{10},(aip),4H_2O]_\infty$ with Ln = Sm, Eu, Gd, Tb and Dy. Numerical results are listed in table S2.

Table S2. Colorimetric and luminance data for $[Ln_2(aip)_3(H_2O)_{10},(aip),4H_2O]_\infty$ with Ln = Sm, Eu, Gd, Tb and Dy

	Sm	Eu	Gd	Tb	Dy
x	0.44(1)	0.26(1)	0.27(1)	0.35(1)	0.33(1)
y	0.25(1)	0.12(1)	0.25(1)	0.56(1)	0.34(1)
Luminance *	0.6(1)	0.3(1)	0.7(1)	47(1)	0.9(1)

* The values are expressed in Cdm^{-2} and represent the luminous flux weighted by the spectral response of human eye.

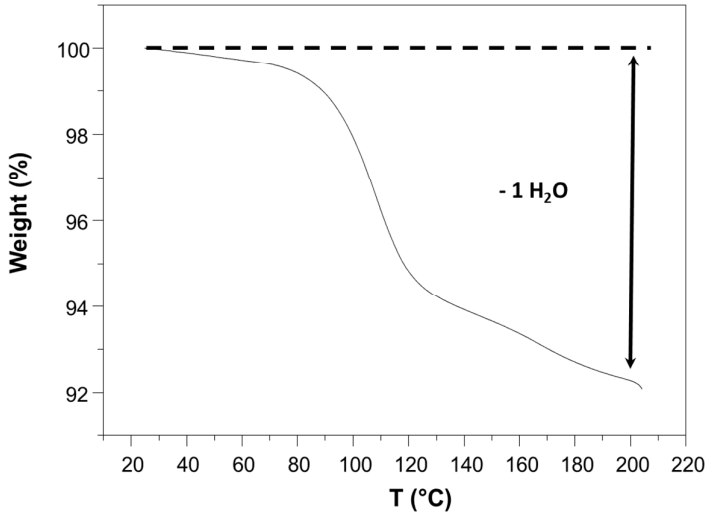

Figure S3. Thermogravimetric analysis for $Na_2(ip),H_2O$.

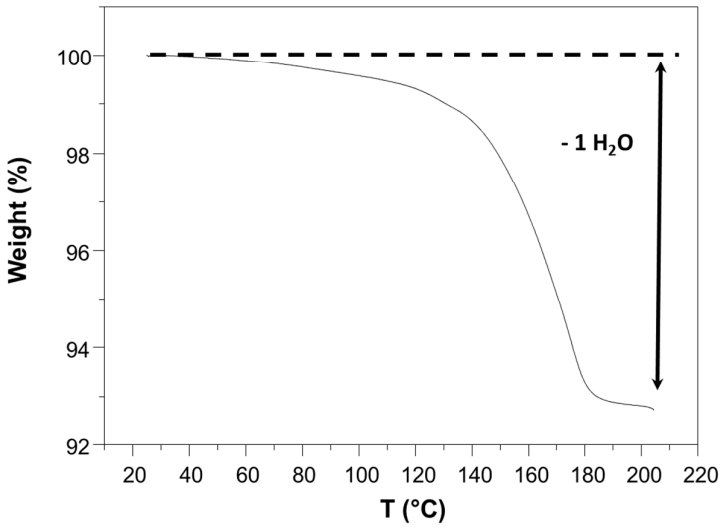

Figure S4. Thermogravimetric analysis for $Na_2(aip),H_2O$.

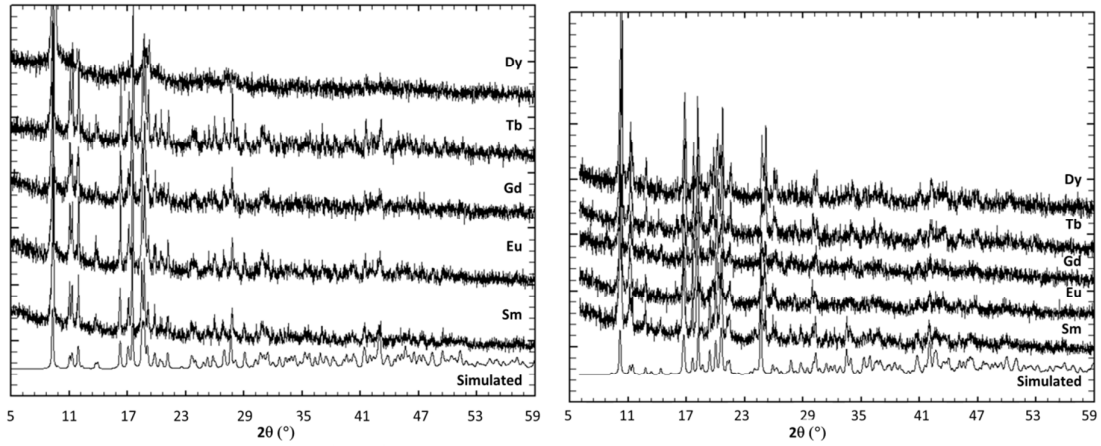

Figure S5. Experimental X-ray diffraction patterns for $[Ln_2(ip)_3(H_2O)_9,6H_2O]_\infty$ (left) and $[Ln_2(aip)_3(H_2O)_{10},(aip),4H_2O]_\infty$ (right) with Ln = Sm, Eu, Gd, Tb and Dy and simulated X-ray diffraction diagrams of $[Gd_2(ip)_3(H_2O)_9,6H_2O]_\infty$ and $[Eu_2(aip)_3(H_2O)_{10},(aip),4H_2O]_\infty$.

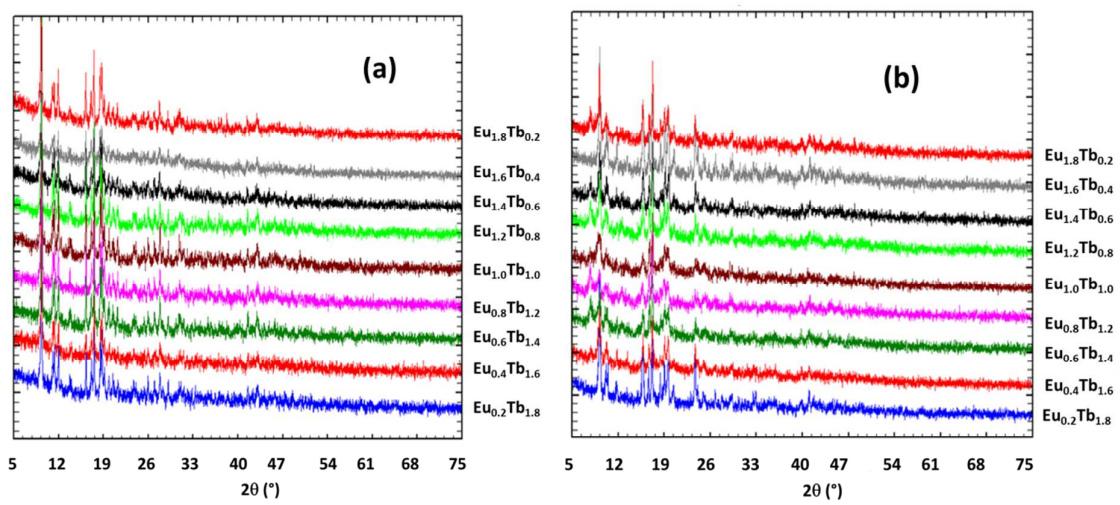

Figure S6. Powder X-ray diffraction patterns for some $[Eu_{2-2x}Tb_{2x}(ip)_3(H_2O)_9,6H_2O]_\infty$ **(a)** and $[Eu_{2-2x}Tb_{2x}(aip)_2(H_2O)_{10},(aip),4H_2O]_\infty$ **(b)** compounds with $0.1 \leq x \leq 0.9$.

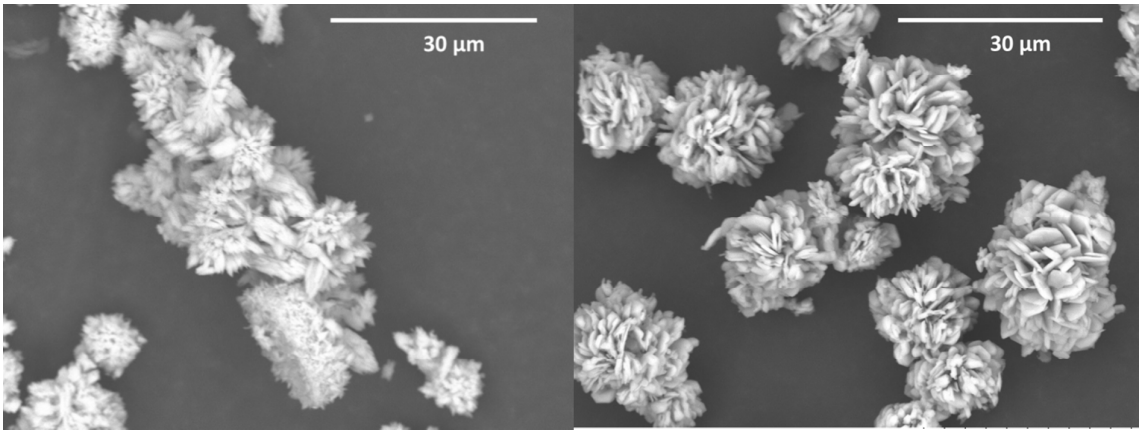

Figure S7. SEM pictures (x 2500) of $[Eu_{1.6}Tb_{0.4}(ip)_3(H_2O)_9,6H_2O]_\infty$ (left) and $[Eu_{1.4}Tb_{0.6}(aip)_3(H_2O)_{10},(aip),4H_2O]_\infty$ (right) micro-crystalline powders.

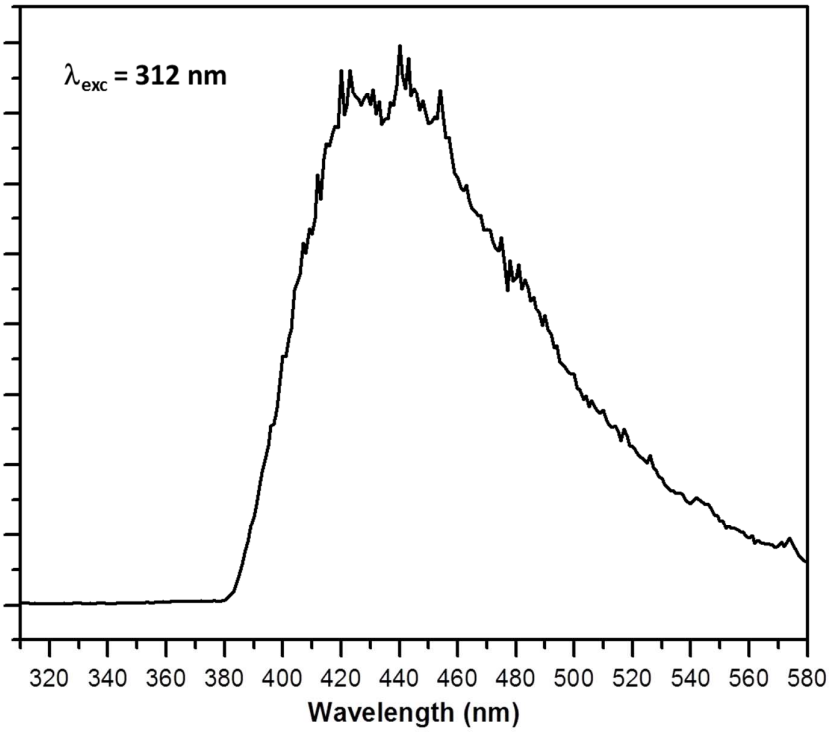

Figure S8. Emission spectrum of $[Gd_2(ip)_3(H_2O)_9,6H_2O]_\infty$ recorded at 77K (λ_{exc} =312 nm).

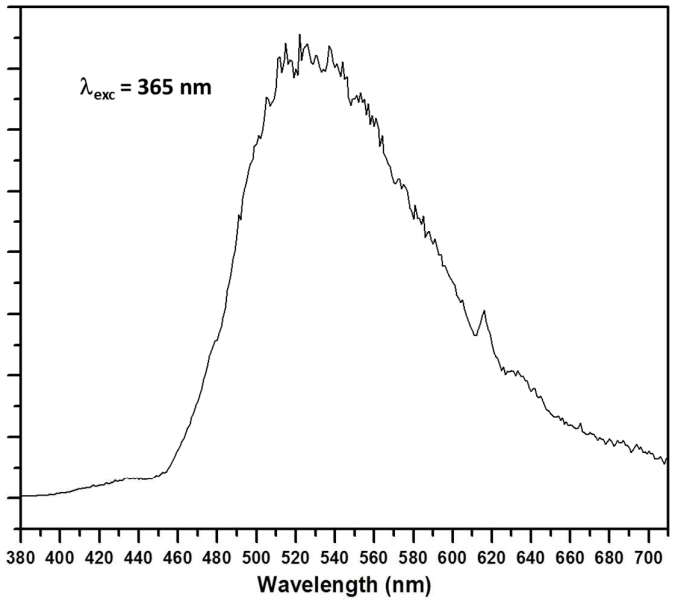

Figure S9. Emission spectrum of $[Gd_2(aip)_3(H_2O)_{10},(aip),4H_2O]_\infty$ recorded at 77K (λ_{exc} = 365 nm).

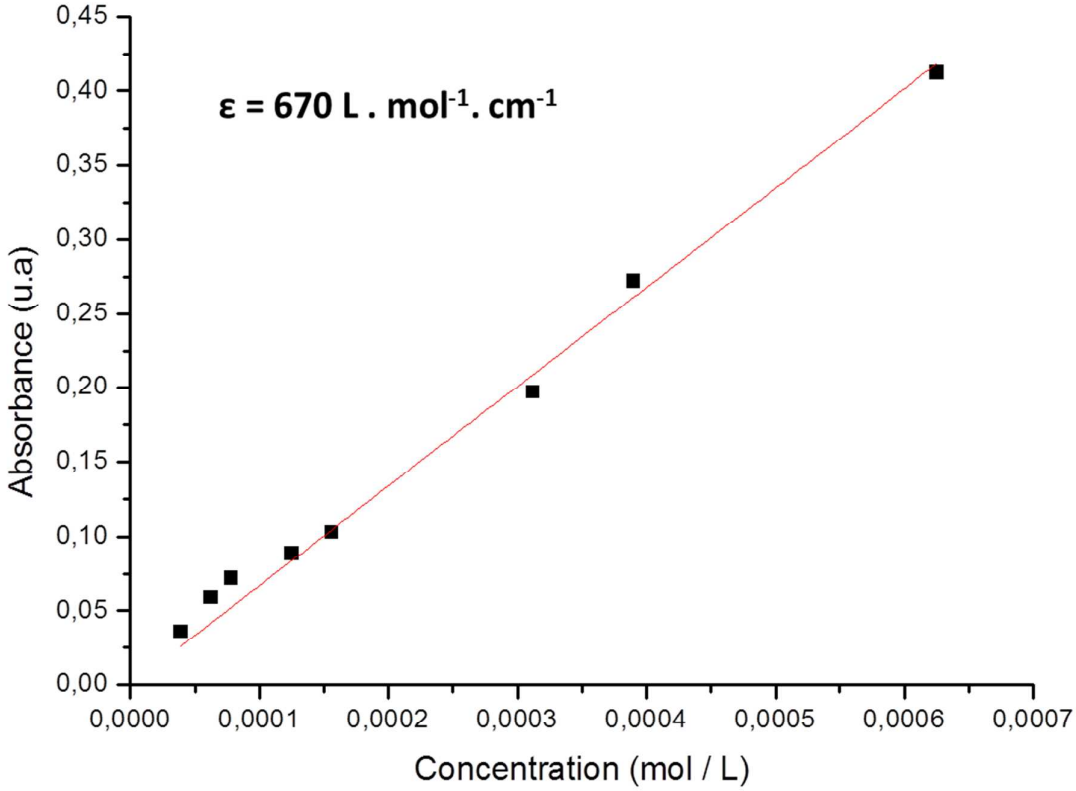

Figure S10 : Absorbance versus concentration of aqueous dilute solutions of the sodium salt of isophthalic acid.

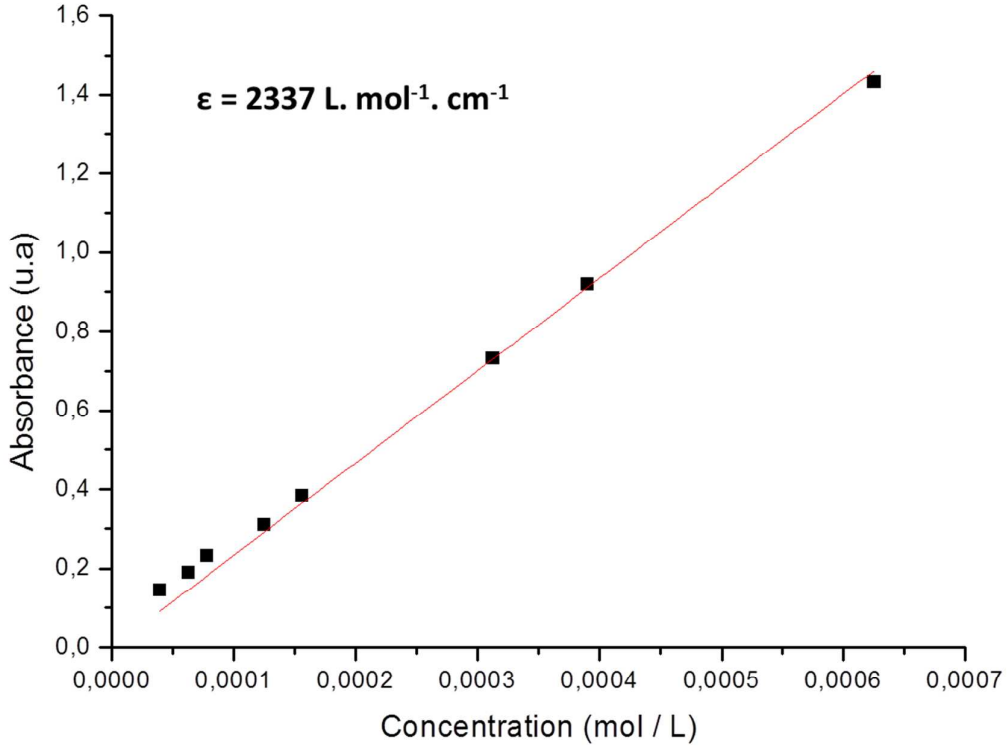

Figure S11 : absorbance versus concentration of aqueous dilute solutions of the sodium salt of amino-isophthalic acid.

Table S3 : Shortest inter-chain distances in a double chain molecular motif of $[Gd_2(ip)_3(H_2O)_9,6H_2O]_\infty$.

Atom1	Atom2	Symmetry	Distance (Å)
O5	O6	x, 2+y, -1+z	2.678(1)
O5	O6	2-x, -1-y, 2-z	2.678(1)
O7	O8	-0.5+x, -0.5-y, -1+z	2.700(1)
O16	O19	x, 2+y, -1+z	2.728(1)
O16	O19	2-x, -1-y, 2-z	2.728(1)
O9	O13	2-x, -1-y, 2-z	2.757(1)
O9	O13	x, 2+y, -1+z	2.757(1)
C43	C34	x, 2+y, -1-z	3.611(1)
C43	C34	x, 2+y, -1-z	3.611(1)
C33	C44	x, 2+y, -1-z	3.644(1)
C33	C44	x, 2+y, -1-z	3.644(1)
C28	C24	x, 2+y, -1-z	3.653(1)
C28	C24	x, 2+y, -1-z	3.653(1)

Table S4 : Shortest inter-chain distances in a double chain molecular motif of $[Eu_2(aip)_2(H_2O)_{10},(aip),4H_2O]_\infty$.

Atom1	Atom2	Symmetry	Distance (Å)
O108	O11	-0.5+x, 1-y, -0.5+z	2.633(1)
O104	O22	0.5+x, 1-y, 0.5+z	2.691(1)
O107	O14	-0.5+x, -y, -0.5+z	2.699(1)
O105	O23	x, y, z	2.720(1)
O103	O24	0.5+x, -y, 0.5+z	2.726(1)
O12	O106	x, y, z	2.735(1)
O102	O21	0.5+x, -y, 0.5+z	2.747(1)
C26	C14	-0.5+x, 1-y, -0.5+z	3.668(1)
C22	C18	-0.5+x, 1-y, -0.5+z	3.678(1)
C16	C24	0.5+x, 1-y, 0.5+z	3.676(1)
C23	C17	-0.5+x, 1-y, -0.5+z	3.695(1)
C28	C12	-0.5+x, 1-y, -0.5+z	3.709(1)
C27	C13	-0.5+x, 1-y, -0.5+z	3.720(1)

Table S5 : Shortest inter-chain distances between double chain molecular motifs of $[Gd_2(ip)_3(H_2O)_9,6H_2O]_\infty$.

Atom1	Atom2	Symmetry	Distance (Å)
O56	O8	x, y, z	2.678(1)
O55	O22	x, y, z	2.705(1)
O21	O53	-1+x, 2+y, -1+z	2.724(1)
O20	O53	-1+x, 2+y, -1+z	2.724(1)
O20	O54	-1+x, 2+y, -1+z	2.747(1)
O17	O55	-1+x, 2+y, -1+z	2.863(1)
O52	O54	x, y, z	2.895(1)
O52	O56	x, y, z	2.896(1)
O21	O22	-1+x, 2+y, -1+z	2.927(1)
O56	O54	x, y, z	3.142(1)
C42	C45	-1.5+x, -0.5-y, -1+z	3.371(1)
C29	C41	-1.5+x, -0.5-y, -1+z	3.276(1)
C35	C36	-1.5+x, -0.5-y, -1+z	3.310(1)
C43	C45	-1.5+x, -0.5-y, -1+z	3.317(1)
C42	C45	-1.5+x, -0.5-y, -1+z	3.371(1)
C30	C32	-1.5+x, -0.5-y, -1+z	3.470(1)
C37	C41	-1.5+x, -0.5-y, -1+z	3.796(1)
C25	C50	-1.5+x, -0.5-y, -1+z	3.939(1)

Table S6 : Shortest inter-chain distances between double chain molecular motifs of $[Eu_2(aip)_2(H_2O)_{10},(aip),4H_2O]_\infty$.

Atom1	Atom2	Symmetry	Distance (Å)
O32	O104	0.5+x, 1-y, 0.5+z	2.673(1)
O101	OW1	-1+x, y, z	2.695(1)
O33	O110	0.5+x, 1-y, 0.5+z	2.710(1)
OW2	OW1	0.5+x, 1-y, 0.5+z	2.721(1)
OW1	OW4	0.5+x, 1-y, 0.5+z	2.831(1)
OW1	OW4	x, y, z	2.831(1)
O34	OW4	x, 1+y, z	2.848(1)
O110	OW1	0.5+x, 1-y, 0.5+z	2.890(1)
O110	OW1	x, y, z	2.890(1)
O108	OW3	-0.5+x, 1-y, 0.5+z	2.977(1)
C16	C32	x, y, 1+z	3.443(1)
C17	C38	x, y, 1+z	3.476(1)
C23	C37	0.5+x, 1-y, 0.5+z	3.525(1)
C22	C37	0.5+x, 1-y, 0.5+z	3.525(1)
C24	C34	0.5+x, 1-y, 0.5+z	3.545(1)
C24	C36	0.5+x, 1-y, 0.5+z	3.555(1)
C33	C16	0.5+x, 1-y, 0.5+z	3.679(1)
C17	C32	x, y, 1+z	3.684(1)

Table S7 : Shortest intermetallic distances between lanthanide ions that belong to the same double chain molecular motif for $[Gd_2(ip)_3(H_2O)_9,6H_2O]_\infty$.

Atom1	Atom2	Symmetry	Distance (Å)
Gd1	Gd1	-1+x, 2+y, -1+z	5.998(1)
Gd1	Gd1	-1.5+x, -1.5-y, -1+z	5.998(1)
Gd1	Gd1	-1+x, 2+y, -1+z	6.378(1)
Gd1	Gd1	-1+x, 2+y, -1+z	9.851(1)
Gd1	Gd1	1.5-x, 2.5+y, 1-z	9.851(1)
Gd1	Gd1	-1+x, 2+y, -1+z	9.851(1)
Gd1	Gd1	1-x, -1-y, 1-z	9.851(1)
Gd1	Gd1	-1+x, 2+y, -1+z	11.180(1)
Gd1	Gd1	-2+x, 2+y, -1+z	11.180(1)
Gd1	Gd1	-0.5+x, -1.5-y, -1+z	15.977(1)
Gd1	Gd1	-1+x, 2+y, -1+z	17.424(1)
Gd2	Gd2	x, 2+y, -1+z	6.033(1)
Gd2	Gd2	2-x, -1-y, 2-z	6.033(1)
Gd2	Gd2	-0.5+x, -0.5-y, -1+z	6.351(1)
Gd2	Gd2	-0.5+x, -0.5-y, -1+z	9.875(1)
Gd2	Gd2	-1+x, 2+y, -1+z	9.875(1)
Gd2	Gd2	2-x, -1-y, 2-z	9.875(1)
Gd2	Gd2	2.5-x, 1.5+y, 2-z	9.875(1)
Gd2	Gd2	0.5+x, -0.5-y, -1+z	11.225(1)
Gd2	Gd2	1.5-x, 1.5+y, 2-z	11.225(1)
Gd2	Gd2	1.5-x, 1.5+y, 2-z	15.948(1)
Gd2	Gd2	-0.5+x, -0.5-y, -1+z	17.424(1)

Table S8 : Shortest intermetallic distances between lanthanide ions that belong to the same double chain molecular motif for $[Eu_2(aip)_2(H_2O)_{10},(aip),4H_2O]_\infty$.

Atom1	Atom2	Symmetry	Distance (Å)
Eu2	Eu1	-1.5+x, 1-y, -0.5+z	5.986(1)
Eu2	Eu1	-1+x, y, z	6.008(1)
Eu2	Eu1	-1+x, y, z	6.391(1)
Eu2	Eu2	-1+x, y, z	9.893(1)
Eu2	Eu2	-0.5+x, 1-y, 0.5+z	9.893(1)
Eu1	Eu1	-1+x, y, z	9.905(1)
Eu1	Eu1	-0.5+x, -y, 0.5+z	9.905(1)
Eu2	Eu1	-1+x, y, z	11.457(1)
Eu1	Eu2	-1+x, y, z	11.457(1)
Eu2	Eu1	-0.5+x, 1-y, 0.5+z	16.023(1)
Eu2	Eu2	-1+x, y, z	17.644(1)

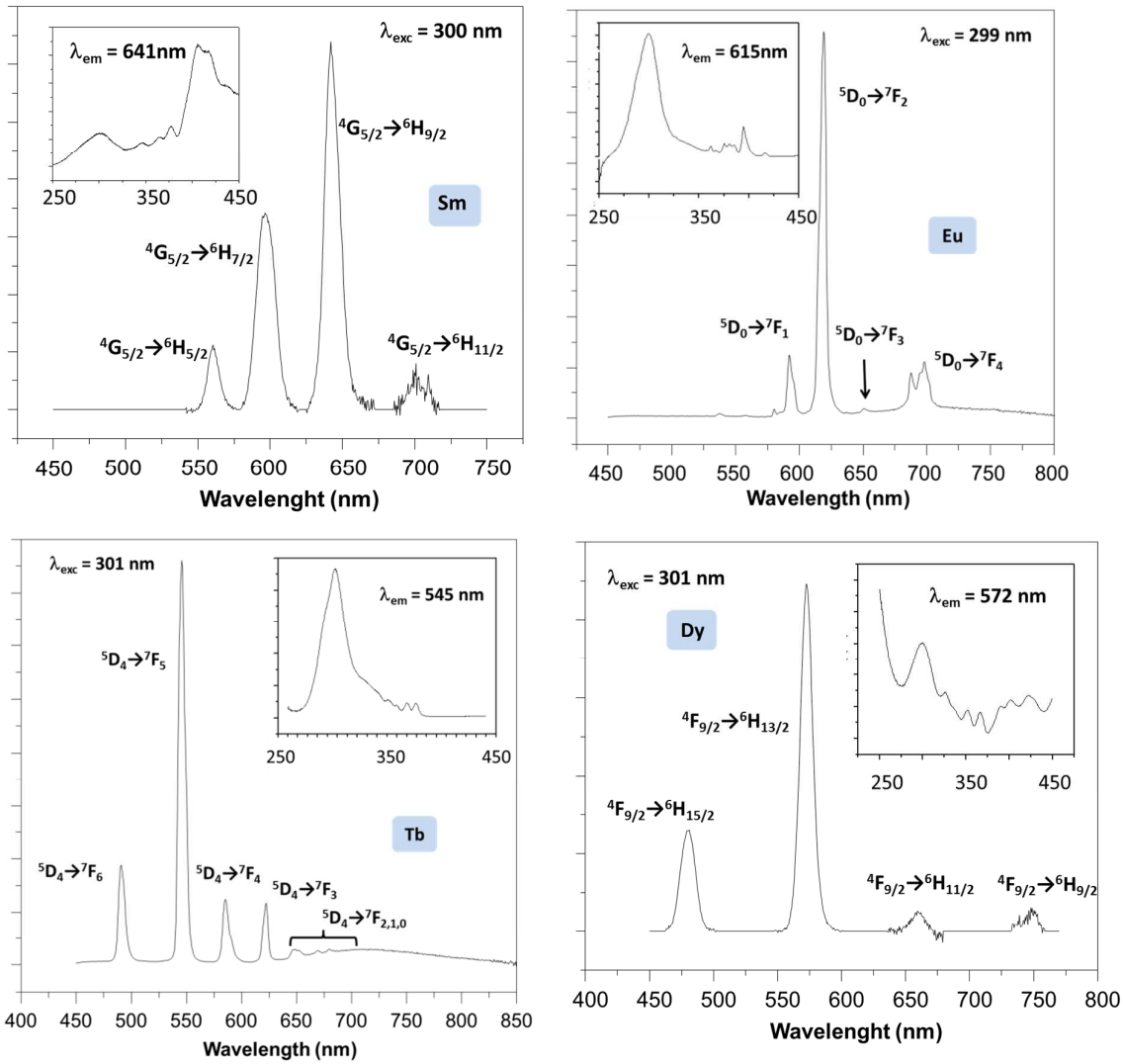

Figure S12. Excitation and emission spectra for $[Ln_2(ip)_3(H_2O)_9,6H_2O]_\infty$ with Ln = Sm, Eu, Tb and Dy.

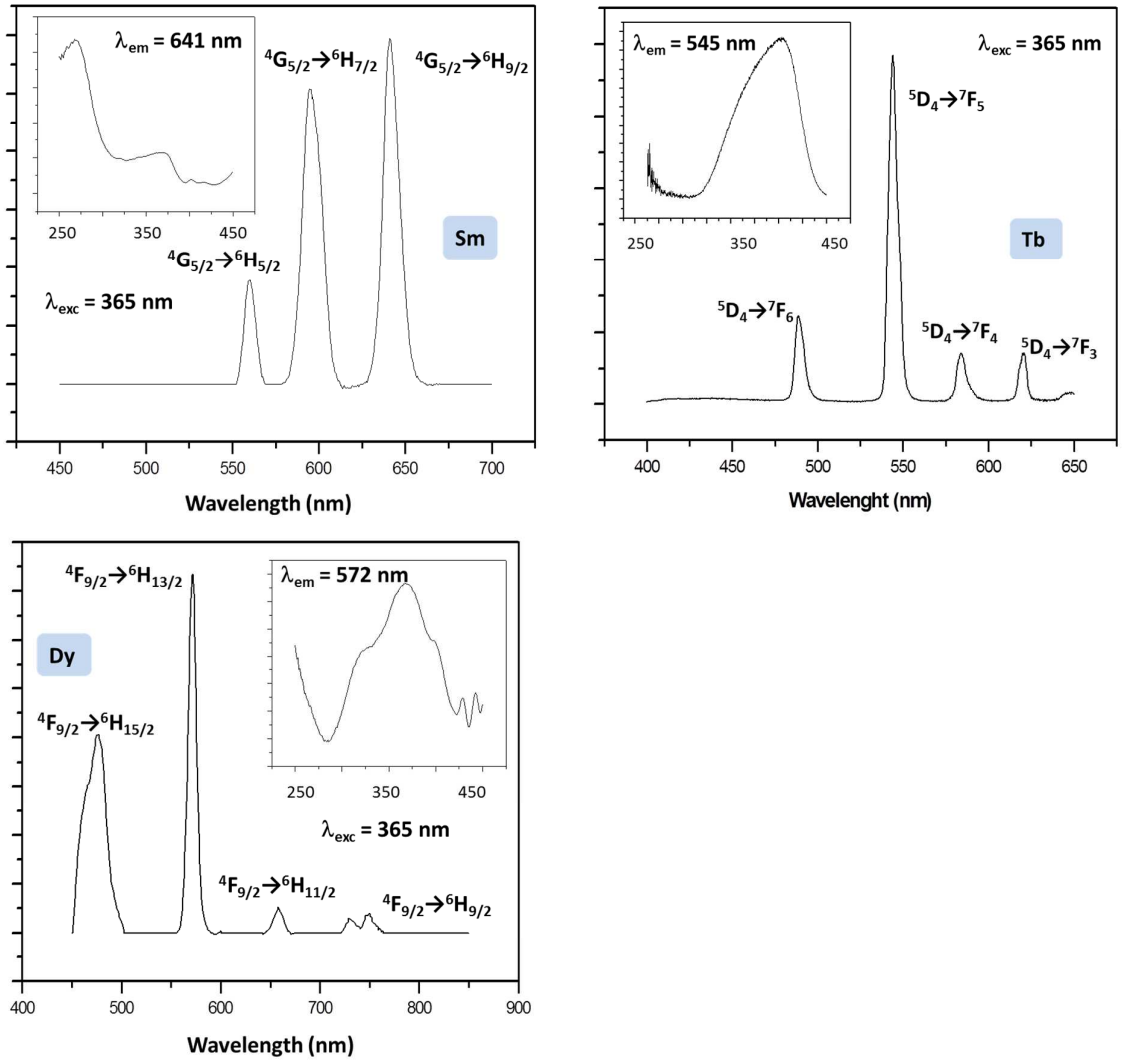

Figure S13. Excitation and emission spectra for $[Ln_2(aip)_3(H_2O)_{10},(aip),4H_2O]_\infty$ with Ln = Sm, Tb and Dy.

Table S9. Colorimetric and luminance data for $[Eu_{2-2x}Tb_{2x}(ip)_3(H_2O)_9,6H_2O]_\infty$ with $0 \leq x \leq 1$.

Formula	Colorimetry		Luminance
	x	y	L*
$[Eu_2(ip)_3(H_2O)_9,6H_2O]_\infty$	0.63(1)	0.33(1)	5.4(1)
$[Eu_{1.8}Tb_{0.2}(ip)_3(H_2O)_9,6H_2O]_\infty$	0.63(1)	0.33(1)	5.6(1)
$[Eu_{1.6}Tb_{0.4}(ip)_3(H_2O)_9,6H_2O]_\infty$	0.62(1)	0.34(1)	5.8(1)
$[Eu_{1.4}Tb_{0.6}(ip)_3(H_2O)_9,6H_2O]_\infty$	0.61(1)	0.35(1)	6.6(1)
$[Eu_{1.2}Tb_{0.8}(ip)_3(H_2O)_9,6H_2O]_\infty$	0.60(1)	0.36(1)	6.8(1)
$[EuTb\ (ip)_3(H_2O)_9,6H_2O]_\infty$	0.57(1)	0.38(1)	7.7(1)
$[Eu_{0.8}Tb_{1.2}(ip)_3(H_2O)_9,6H_2O]_\infty$	0.56(1)	0.40(1)	9.6(1)
$[Eu_{0.6}Tb_{1.4}(ip)_3(H_2O)_9,6H_2O]_\infty$	0.52(1)	0.42(1)	9.4(1)
$[Eu_{0.4}Tb_{1.6}(ip)_3(H_2O)_9,6H_2O]_\infty$	0.50(1)	0.44(1)	12.0(1)
$[Eu_{0.2}Tb_{1.8}(ip)_3(H_2O)_9,6H_2O]_\infty$	0.45(1)	0.48(1)	20.1(1)
$[Tb_2(ip)_3(H_2O)_9,6H_2O]_\infty$	0.35(1)	0.56(1)	42.9(1)

* The values are expressed in Cdm^{-2} and represent the luminous flux weighted by the spectral response of human eye.

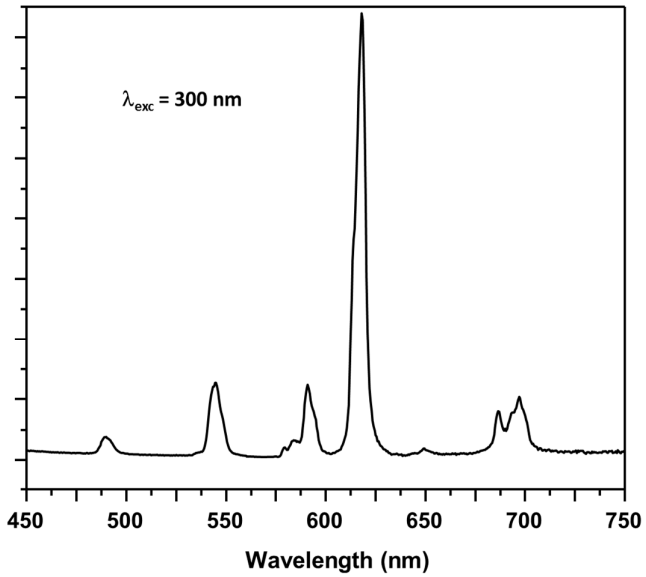

Figure S14. Luminescence spectrum for $[EuTb(ip)_3(H_2O)_9,6H_2O]_\infty$.

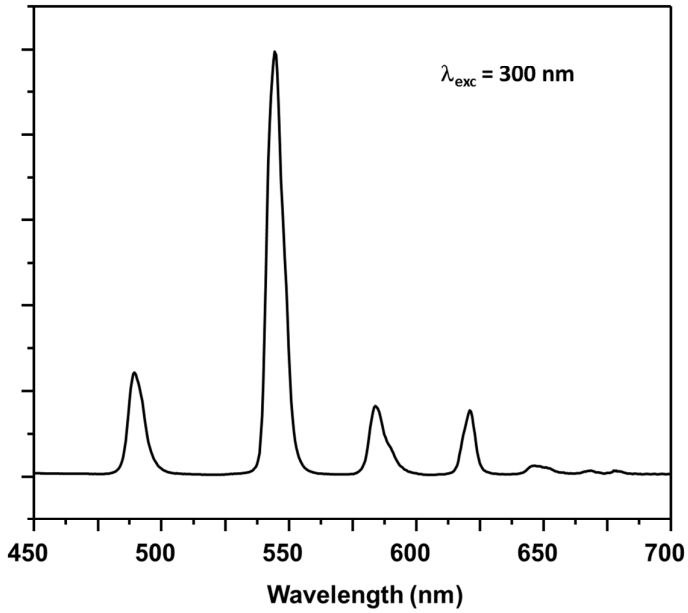

Figure S15. Luminescence spectrum for $[GdTb(ip)_3(H_2O)_9,6H_2O]_\infty$.

Table S10. Colorimetric an luminance data for $[Eu_{2-2x}Tb_{2x}(aip)_2(H_2O)_{10},(aip),4H_2O]_\infty$ with $0 \leq x \leq 1$.

Formula	Colorimetry		Luminance
	x	y	L*
$[Eu_2(aip)_2(H_2O)_{10},(aip),4H_2O]_\infty$	0.26(1)	0.12(1)	0.3(1)
$[Eu_{1.8}Tb_{0.2}(aip)_2(H_2O)_{10},(aip),4H_2O]_\infty$	0.31(1)	0.21(1)	0.3(1)
$[Eu_{1.6}Tb_{0.4}(aip)_2(H_2O)_{10},(aip),4H_2O]_\infty$	0.31(1)	0.22(1)	0.3(1)
$[Eu_{1.4}Tb_{0.6}(aip)_2(H_2O)_{10},(aip),4H_2O]_\infty$	0.32(1)	0.24(1)	0.3(1)
$[Eu_{1.2}Tb_{0.8}(aip)_2(H_2O)_{10},(aip),4H_2O]_\infty$	0.32(1)	0.26(1)	0.3(1)
$[EuTb(aip)_2(H_2O)_{10},(aip),4H_2O]_\infty$	0.32(1)	0.28(1)	0.3(1)
$[Eu_{0.8}Tb_{1.2}(aip)_2(H_2O)_{10},(aip),4H_2O]_\infty$	0.32(1)	0.29(1)	0.4(1)
$[Eu_{0.6}Tb_{1.4}(aip)_2(H_2O)_{10},(aip),4H_2O]_\infty$	0.33(1)	0.33(1)	0.7(1)
$[Eu_{0.4}Tb_{1.6}(aip)_2(H_2O)_{10},(aip),4H_2O]_\infty$	0.33(1)	0.42(1)	1.8(1)
$[Eu_{0.2}Tb_{1.8}(aip)_2(H_2O)_{10},(aip),4H_2O]_\infty$	0.33(1)	0.52(1)	5.5(1)
$[Tb_2(aip)_2(H_2O)_{10},(aip),4H_2O]_\infty$	0.35(1)	0.56(1)	47.3(1)

* The values are expressed in Cdm^{-2} and represent the luminous flux weighted by the spectral response of human eye.