SUPPORTING INFORMATION

Hexa-nuclear molecular precursors as tools to design luminescent coordination polymers with lanthanides segregation.

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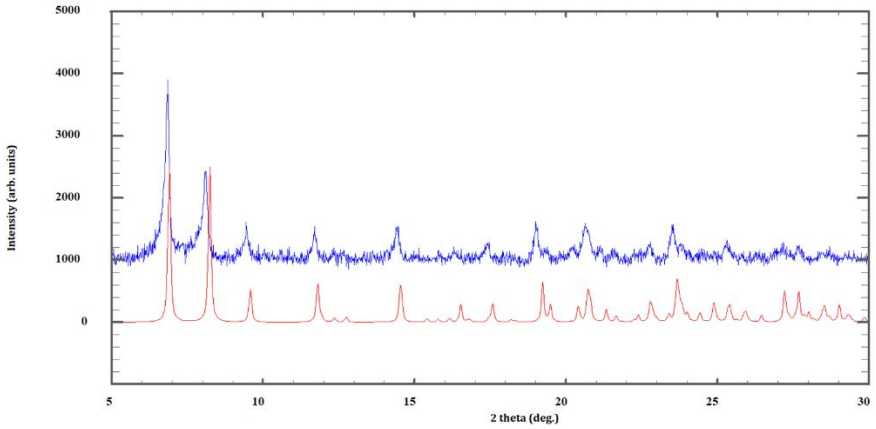

Figure S1. Experimental X-ray powder pattern of $[Dy_2(2\text{-bb})_6]_\infty$ (top) and simulated X-ray powder diagram of $[Dy_2(2\text{-bb})_6]_\infty$ from the crystal structure (bottom).

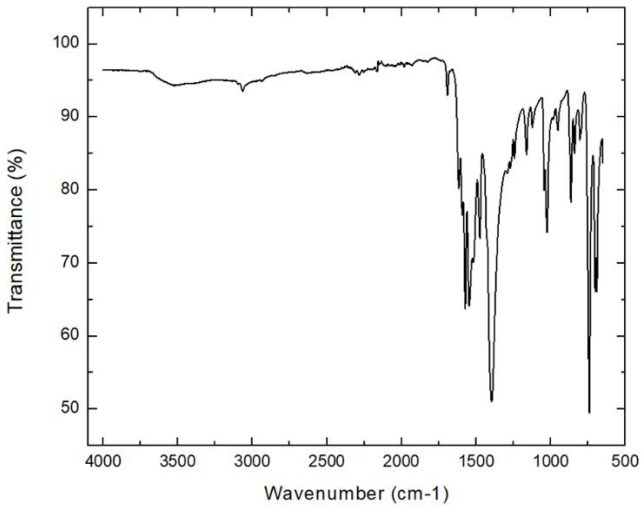

Figure S2. IR spectrum of $[Dy_2(2\text{-bb})_6]_\infty$.

Table S1. Shape calculations of the coordination polyhedrons of $[Tb(4\text{-fb})]_\infty$, $[Tb(4\text{-cb})]_\infty$, $[Sm(4\text{-bb})]_\infty$, $[Y(3\text{-fb})]_\infty$ and $[Tb(3\text{-cb})]_\infty$.

$[ML_8]$	OP-8	HPY-8	HBPY-8	CU-8	SAPR-8	TDD-8	JGBF-8	JETBPY-8	JBTPR-8	BTPR-8	**JSD-8**	TT-8	ETBPY-8
Dy1	28.648	22.165	11.445	10.690	4.964	3.577	9.284	22.608	3.938	3.720	**2.958**	11.415	21.447

OP-8 ≡ D8h-Octagon; HPY-8 ≡ C7v-Heptagonal pyramid; HBPY-8 ≡ D6h-Hexagonal bipyramid; CU-8 ≡ Oh-Cube; SAPR-8 ≡ 4d-Square antiprism; TDD-8 ≡ D2d-Triangular dodecahedron; JGBF-8 ≡ D2d-Johnson gyrobifastigium J26; JETBPY-8 ≡ D3h-Johnson elongated triangular bipyramid J14; JBTPR-8 ≡ C2v-Biaugmented trigonal prism J50; BTPR-8 ≡ C2v-Biaugmented trigonal prism; **JSD-8 ≡ D2d-Snub diphenoid J84**; TT-8 ≡ Td-Triakis tetrahedron; ETBPY-8 ≡ D3h-Elongated trigonal bipyramid.

$[ML_7]$	HP-7	HPY-7	**PBPY-7**	COC-7	CTPR-7	JPBPY-7	JETPY-7						
Dy2	29.905	23.824	**1.119**	7.501	5.933	3.806	22.701						

HP-7 ≡ D7h-Heptagon; HPY-7 ≡ C6v-Hexagonal pyramid; **PBPY-7 ≡ D5h-Pentagonal bipyramid**; COC-7 ≡ C3v-Capped octahedron; CTPR-7 ≡ C2v-Capped trigonal prism; JPBPY-7 ≡ D5h-Johnson pentagonal bipyramid J13; JETPY-7 ≡ C3v-Johnson elongated triangular pyramid J7

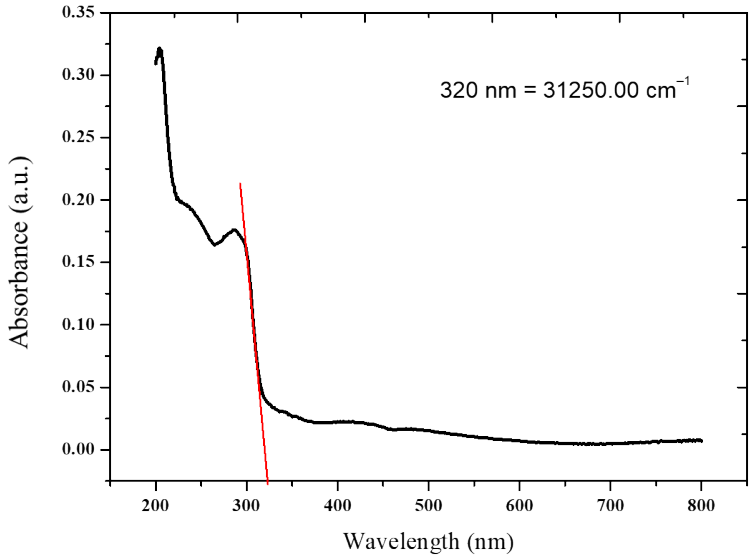

Figure S3. Room temperature solid-state absorption spectrum of $[Y_2(2\text{-bb})_6]_\infty$.

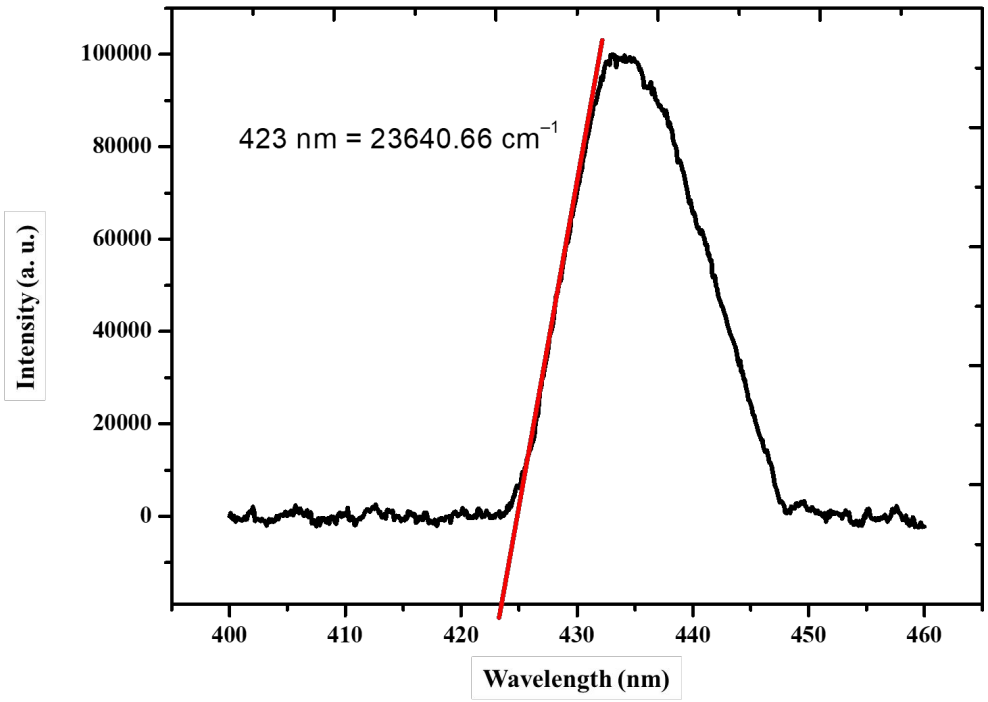

Figure S4. Solid-state emission spectrum of $[Y_2(2\text{-bb})_6]_\infty$ recorded at 77 K (λ_{exc} = 300 nm).

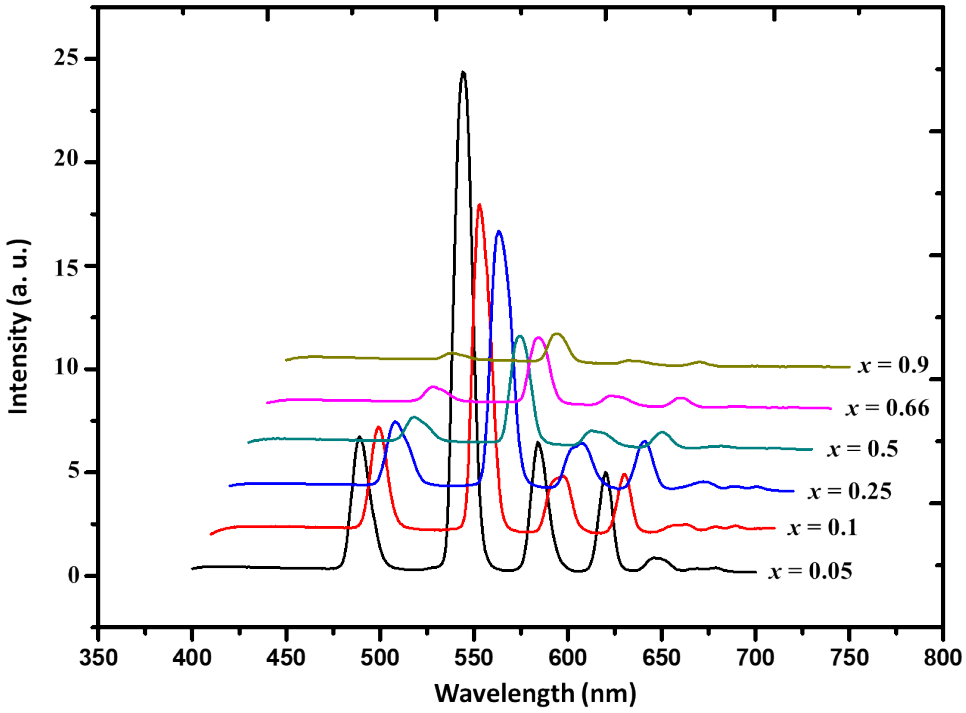

Figure S5. Room temperature solid-state emission spectra of $[Y_{2x}Tb_{2-2x}(2\text{-bb})_6]_\infty$ with $0.05 \leq x \leq 0.9$ (λ_{exc} = 300 nm).

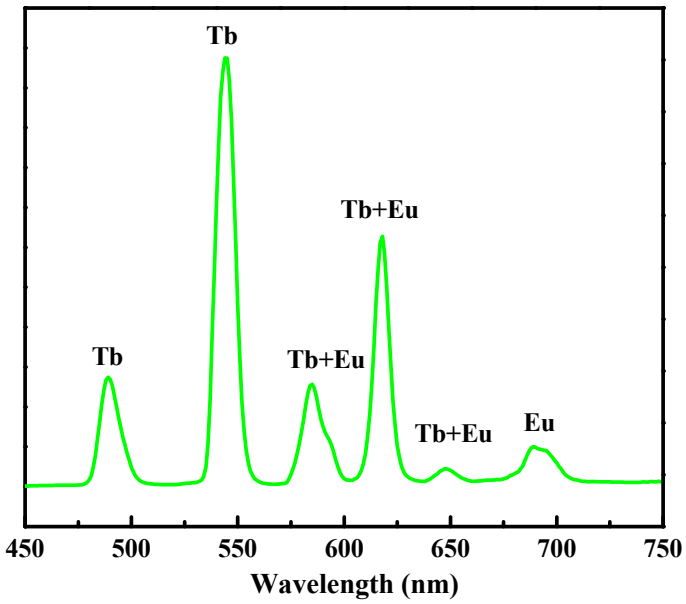

Figure S6. Room temperature solid-state emission spectrum of $\{[Y_2(2\text{-bb})_6]_{0.8}[Tb_2(2\text{-bb})_6]_{0.1}[Eu_2(2\text{-bb})_6]_{0.1}\}_\infty$ (λ_{exc} = 300 nm).