

A new synthetic route towards binuclear 3d-4f complexes, using non-compartmental ligands derived from *o*-vanillin. Syntheses, crystal structures, magnetic and luminescent properties

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ELECTRONIC SUPPORTING INFORMATION

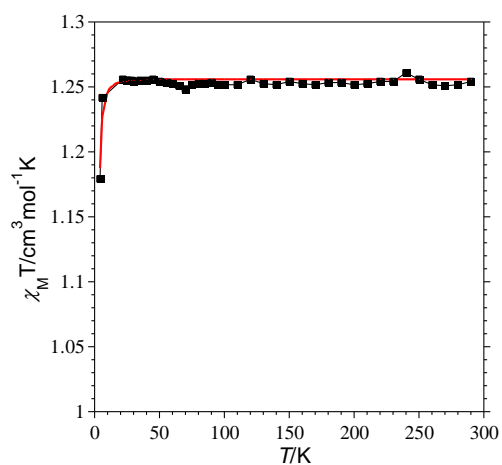


Figure S1. $\chi_M T$ curve for compound **14**. The red solid lines represent the best fit to the data.

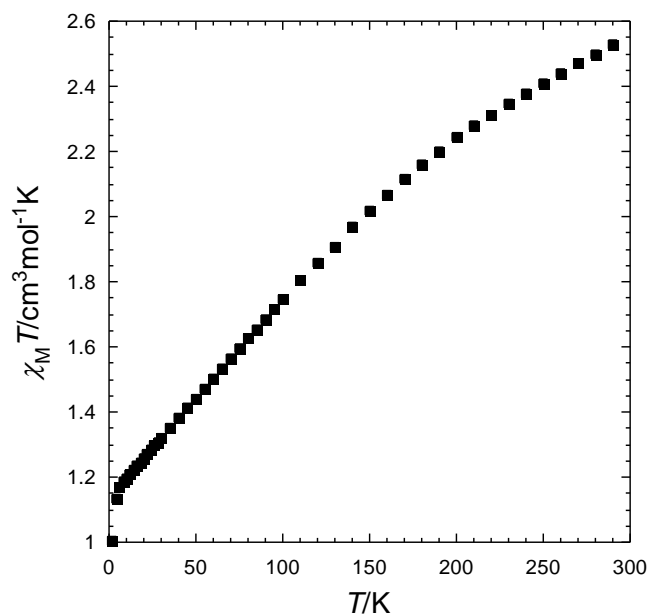


Figure S2. $\chi_M T$ curve for compound **16**.

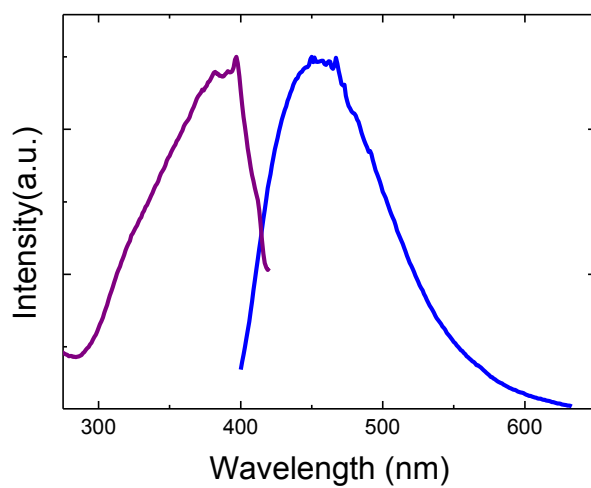


Figure S3. Excitation ($\lambda_{\text{em}} = 450 \text{ nm}$) and emission spectra of complex **10** ($\lambda_{\text{ex}} = 350 \text{ nm}$).

Table S1. Unit cell parameters for compounds **8**, **12**, and **14**

| Compound | 8 | 12 | 14 |
|---------------------------------|---|---|--|
| Chemical formula | C ₃₀ H ₂₉ PrN ₈ O ₁₃ Zn | C ₃₀ H ₂₉ DyN ₈ O ₁₃ Zn | C ₂₈ H ₃₄ LaN ₇ NiO ₁₇ |
| <i>M</i> (g mol ⁻¹) | 915.91 | 928.43 | 938.24 |
| Temperature, (K) | 293(2) | 293(2) | 293(2) |
| Wavelength, (Å) | 0.71073 | 0.71073 | 0.71073 |
| Crystal system | <i>Monoclinic</i> | <i>Monoclinic</i> | <i>Monoclinic</i> |
| Space group | <i>C2/c</i> | <i>C2/c</i> | <i>C2/c</i> |
| <i>a</i> (Å) | 22.0679(15) | 22.0192(11) | 14.4397(9) |
| <i>b</i> (Å) | 12.8879(6) | 12.7216(13) | 23.8480(9) |
| <i>c</i> (Å) | 16.9507(11) | 16.9945(11) | 23.5249(15) |
| α (°) | 90 | 90 | 90 |
| β (°) | 130.544(4) | 130.378(12) | 105.121(5) |
| γ (°) | 90 | 90 | 90 |
| <i>V</i> (Å ³) | 3663.5(4) | 3626.5(5) | 7820.5(8) |

Geometrical restraints were used for the O-H bond lengths of the coordinated water molecules in the refinement of the crystal structure of [Ni(valampy)₂Sm(O₂NO)₃(H₂O)₂] \cdot 2H₂O (**15**).