

Comparing the optical properties and thermal stability of green (TbPO₄), yellow (DyPO₄), and red (PrPO₄) emitting single crystal samples

(Supplementary information)

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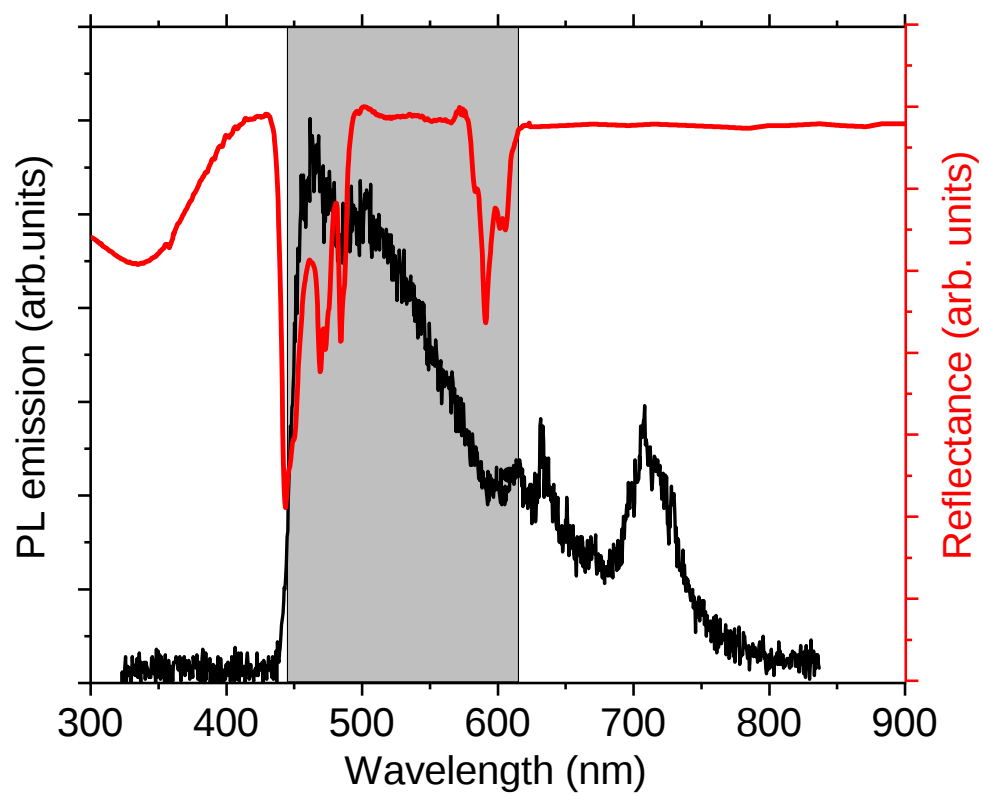


Fig. S1 The emission spectra in PrPO_4 measured for an excitation at 365 nm (black line). The diffuse reflectance spectrum is also presented for a comparison (red line).

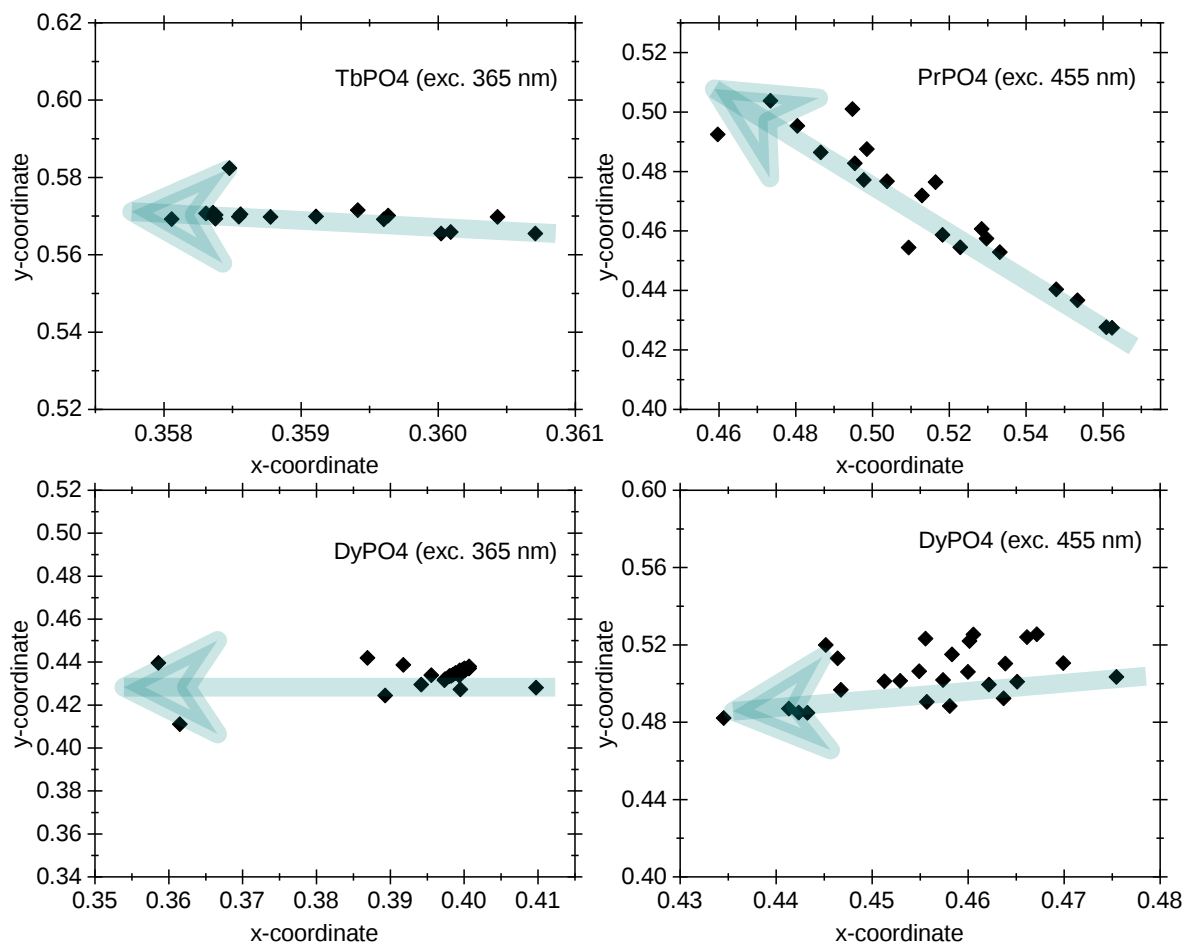


Fig. S2 The temperature dependence of CIE coordinates for three samples under different excitation wavelengths. The temperature of the sample increases in the direction of the respective arrows.

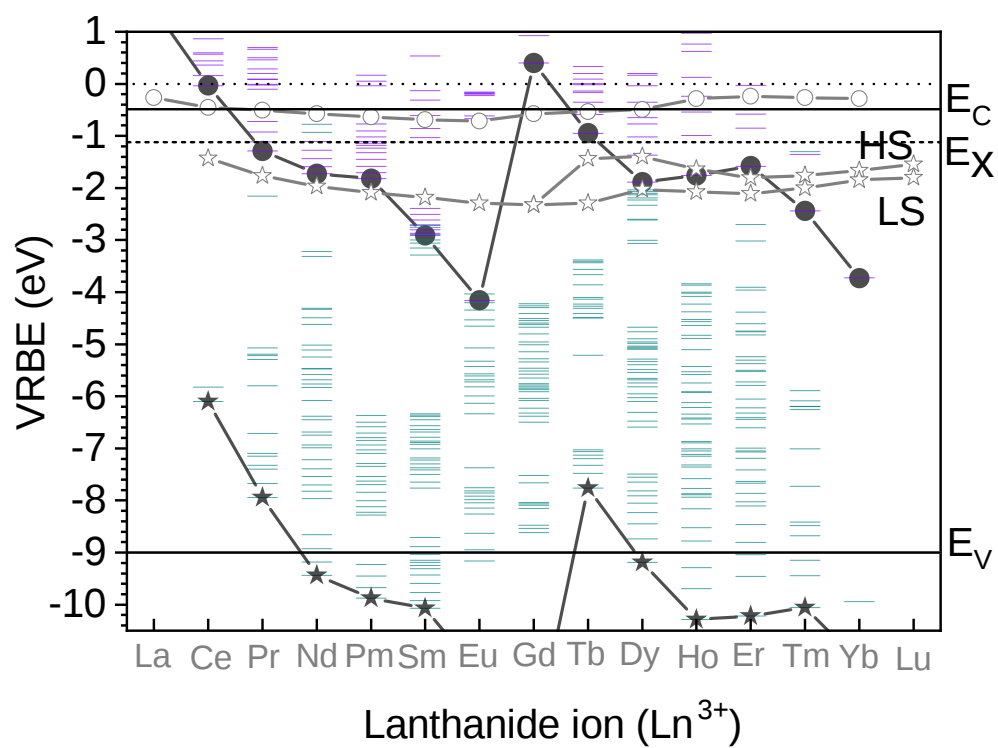


Fig. S3 VRBE diagram of electronic structure of lanthanide ions in the divalent and trivalent state. The connected black line indicates the ground state (4f) for all lanthanides in their +3 state (★), whereas the connected gray lines (★), represents the ground state for all lanthanides in their +2 state. The connected black line (●) and gray lines (○) represent the lowest 5d states for all lanthanides in their +3 and +2 state, respectively. The top of the valence band (E_V), the electron binding energy in the exciton state (E_X), and the bottom of the CB (E_C), as well as the high-spin (HS) and low-spin (LS) states, are also indicated. The HS and LS states represent spin-forbidden and spin-allowed transitions, respectively.