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Synthesis, structure and magnetic properties of the dinuclear complex [1,3-C_6H_4{NC(Ph)N($SiMe_3$)}$_2$]$_3$$Dy_2$ coordinated by *ansa*-bis(amidinate) ligands with a *m*-phenylene linker

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Equipment and materials.

All experiments were performed in evacuated tubes using standard Schlenk and glovebox techniques with the rigorous exclusion of traces of moisture and air. [1,3-C_6H_4{NC(Ph)N($SiMe_3$)}$_2$$Li_2(THF)_2$]$_2$ (**1**) was prepared according to literature procedure[11]. After drying over KOH, THF was purified by distillation from sodium/benzophenone ketyl; hexane and toluene were dried by distillation from sodium/triglyme and benzophenone ketyl prior to use. Infrared spectra were recorded on a Bruker-Vertex 70 instrument. Samples were prepared in dry argon atmosphere as suspensions in Nujol mull.

Synthesis of [1,3-C_6H_4{NC(Ph)N($SiMe_3$)}$_2$]$_3$$Dy_2$ (2).

A suspension of **1**[11] (1.49 g, 1.21 mmol) in THF (30 mL) was added to a suspension of $DyCl_3$ (0.43 g, 1.60 mmol) in THF (20 mL), and the reaction mixture was stirred at 25 °C for 48 h. The solvent was removed in vacuo, and the remaining solid was extracted with toluene (50 mL). After filtration of the toluene extract, the solvent was removed in vacuo at room temperature. Slow cooling of concentrated THF-hexane solution (1:5) afforded colorless crystals (1.08 g) of **2**. The crystals were washed with cold hexane and dried at ambient temperature in vacuo for 10 min. Yield 76%. Found (%): C, 55.71; H, 6.28; N, 9.30; Dy, 18.14. [$C_{82.75}H_{106.25}N_{12}O_{0.625}Si_6Dy_2$]. Clacd. (%): C, 56.07; H, 6.04; N, 9.48; Dy, 18.33. IR (Nujol, KBr): ν = 1595 (s), 1569 (s), 1282 (s), 1245 (s), 1138 (s), 1121 (s), 1073 (s), 1031 (s), 1017 (s), 972 (s), 918 (s), 890 (s), 837 (s), 777 (s), 755 (s), 696 (s), 637 (s), 620 (s), 589 (m), 518 (m), 501 (s), 459 (s) cm^{-1}.

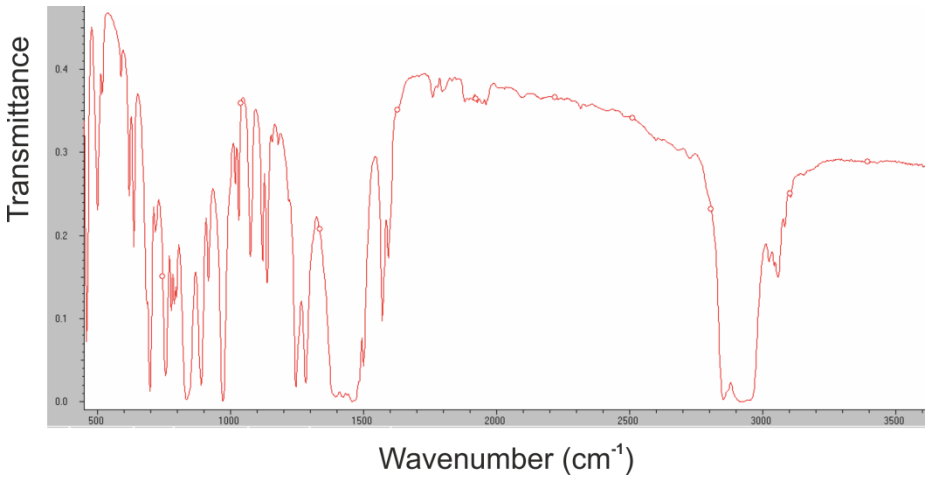

Figure 1S IR spectrum of complex **2**.

Magnetic Properties.

Magnetic susceptibility data were collected with a Quantum Design MPMS-XL SQUID magnetometer at 1.8–350 K with an applied magnetic field up to 7 T. The data were corrected for the sample holder, and the diamagnetic contributions were calculated from Pascal's constants. The ac magnetic susceptibility measurements were performed in a 3 Oe oscillating field in an applied or zero external dc field.