



The ytterbium complex (4) was obtained in an inert gas atmosphere, starting from (1) (0.25 g) and Yb metal filings (0.43 g) in THF (25 ml). Initially the reaction mixture was stirred at room temperature for 40–60 min, and then at  $-20^{\circ}\text{C}$  for 4 h. The light-cherry coloured solution was separated from the precipitated Hg and excess of Yb by decantation, then cooled n-hexane (50 ml) was added to the filtrate. The precipitated complex (4) was separated by filtration from the solution (75% yield) [0.32 g, m.p.  $95^{\circ}\text{C}$  (decomp.); found: C 40.0, H 3.3, Cr 15.8, calc. for  $\text{C}_{26}\text{H}_{26}\text{Cr}_2\text{YbO}_8$ : C 42.0, H 3.5, Cr 14.0; i.r. (in light petroleum)  $\nu(\text{CO})$  1965, 1890, 1695, 1650,  $\nu(\text{THF})$  890, 1075  $\text{cm}^{-1}$ ;  $^1\text{H}$  n.m.r.  $\delta(\text{C}_6\text{H}_5)$  5.645,  $J(^{171}\text{Yb}-^1\text{H})$  80 Hz,  $\delta(\text{THF})$  1.71 and 3.62].

Similarly, using Eu (0.35g) in THF (25 ml) compound (3) was obtained in 73% yield [m.p.  $55^{\circ}\text{C}$  (decomp.); found: C 39.45, H 3.3, Cr 18.0, calc. for  $\text{C}_{22}\text{H}_{18}\text{Cr}_2\text{EuO}_7$ : C 40.6, H 2.8, Cr 16.0; i.r. (in THF)  $\nu(\text{CO})$  1958, 1880, 1780, 1725  $\text{cm}^{-1}$ . Compound (2) was produced in 68% yield [m.p.  $62^{\circ}\text{C}$  (decomp.); found: C 44.1, H 3.7, Cr 16.9, calc. for

$\text{C}_{26}\text{H}_{26}\text{Cr}_2\text{SmO}_8$ : C 43.3, H 3.6, Cr 14.4; i.r. (in THF)  $\nu(\text{CO})$  1960, 1882, 1750, 1715  $\text{cm}^{-1}$ ].

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