Supporting Information

Lanthanum Tribenzyl Complexes as Convenient Starting Materials for Organolanthanum Chemistry

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Fits used for determination of rate constants:

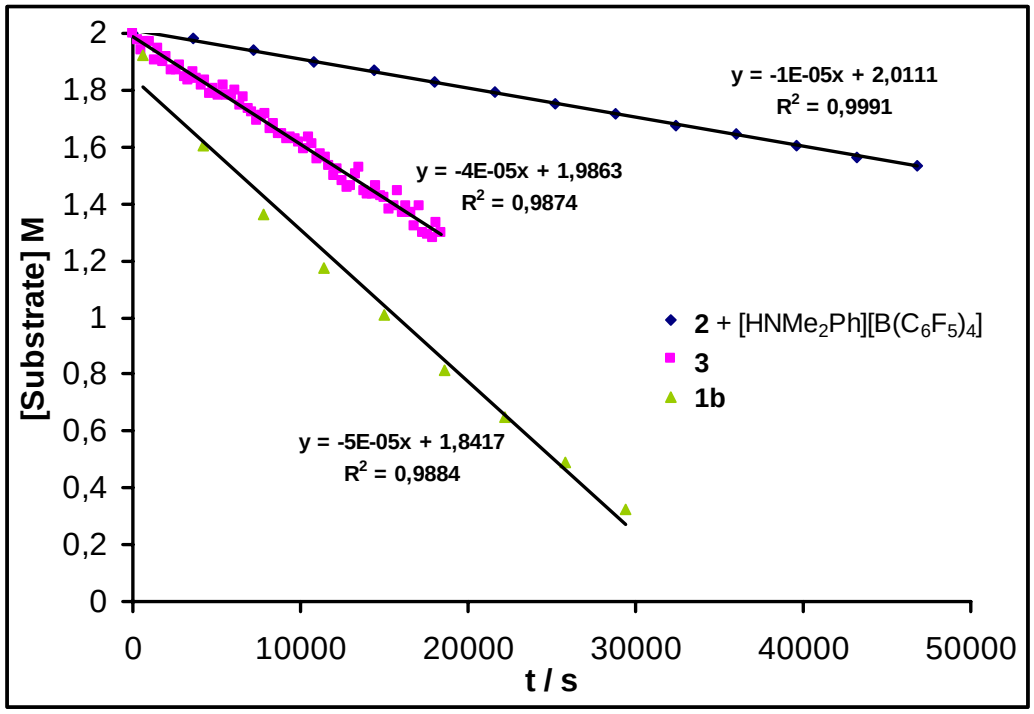

Figure 1. Hydroamination/cyclisation of 2,2-dimethyl-4-pentenylamine with **1b** (C_6D_5Br), **2**/[$HNMe_2Ph$][$B(C_6F_5)_4$] (C_6D_5Br) and **3** (C_6D_6) at 50 °C.

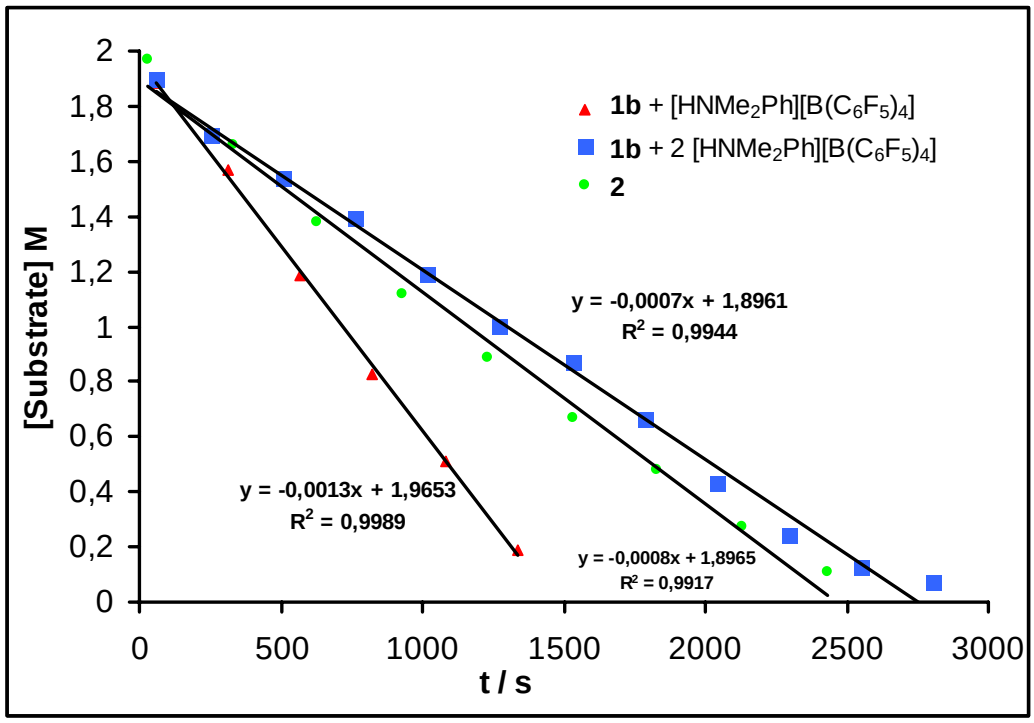

Figure 2. Hydroamination/cyclisation of 2,2-dimethyl-4-pentenylamine with **1b**/[$HNMe_2Ph$][$B(C_6F_5)_4$], **1b**/2[$HNMe_2Ph$][$B(C_6F_5)_4$] in (C_6D_5Br) and **2** (C_6D_6) at 50 °C.

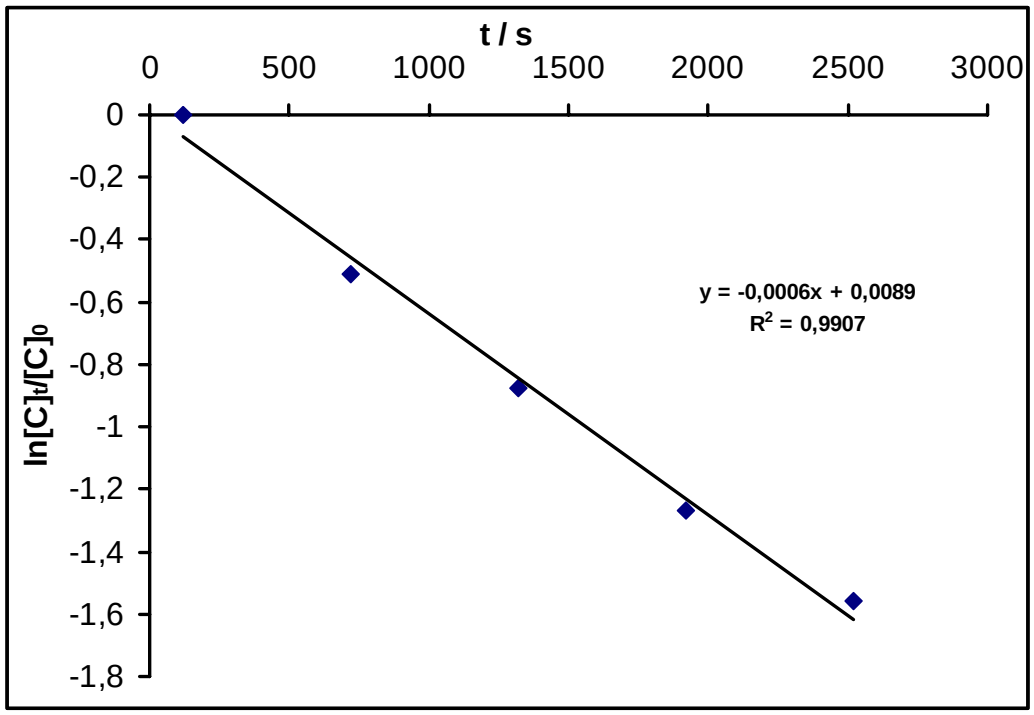

Figure 3. Double bond isomerization of 2,2-dimethyl-4-pentenylamine to *E*-2,2-dimethyl-3-pentenylamine with **1b/3**[$HNMe_2Ph$][$B(C_6F_5)_4$] in C_6D_5Br at 50 °C.

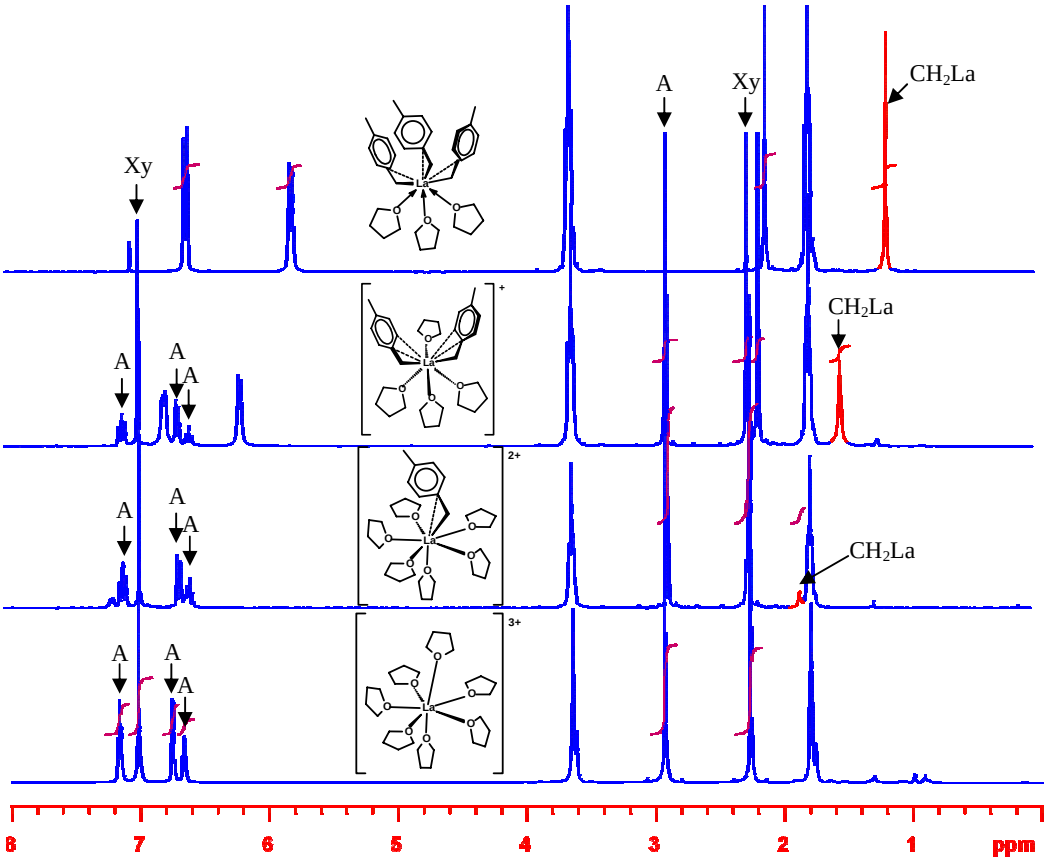

Figure 4. ^{1}H NMR spectra (THF-d_8) of **1b** and sequential reaction of **1b** with [HNMe$_2$Ph][B(C$_6$F$_5$)$_4$] to generate cationic lanthanum species (A = NMe$_2$Ph; Xy = p-1,4-Me$_2$-C$_6$H$_4$).