Electronic Supplementary Information

Uranium(IV) Alkyl Complexes of a Rigid Dianionic NON-Donor Ligand: Synthesis and Quantitative Alkyl Exchange Reactions with Alkyl Lithium Reagents

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Figures

Figure S1. Variable Temperature ^{1}H NMR spectra of $[(XA_2)U(CH_2SiMe_3)_2]$ (**1**) in toluene-d_8 (500 MHz). Signals for U-CH_2 protons, which are located at very high (>100 ppm) and very low (<–100 ppm) frequencies, are not shown.

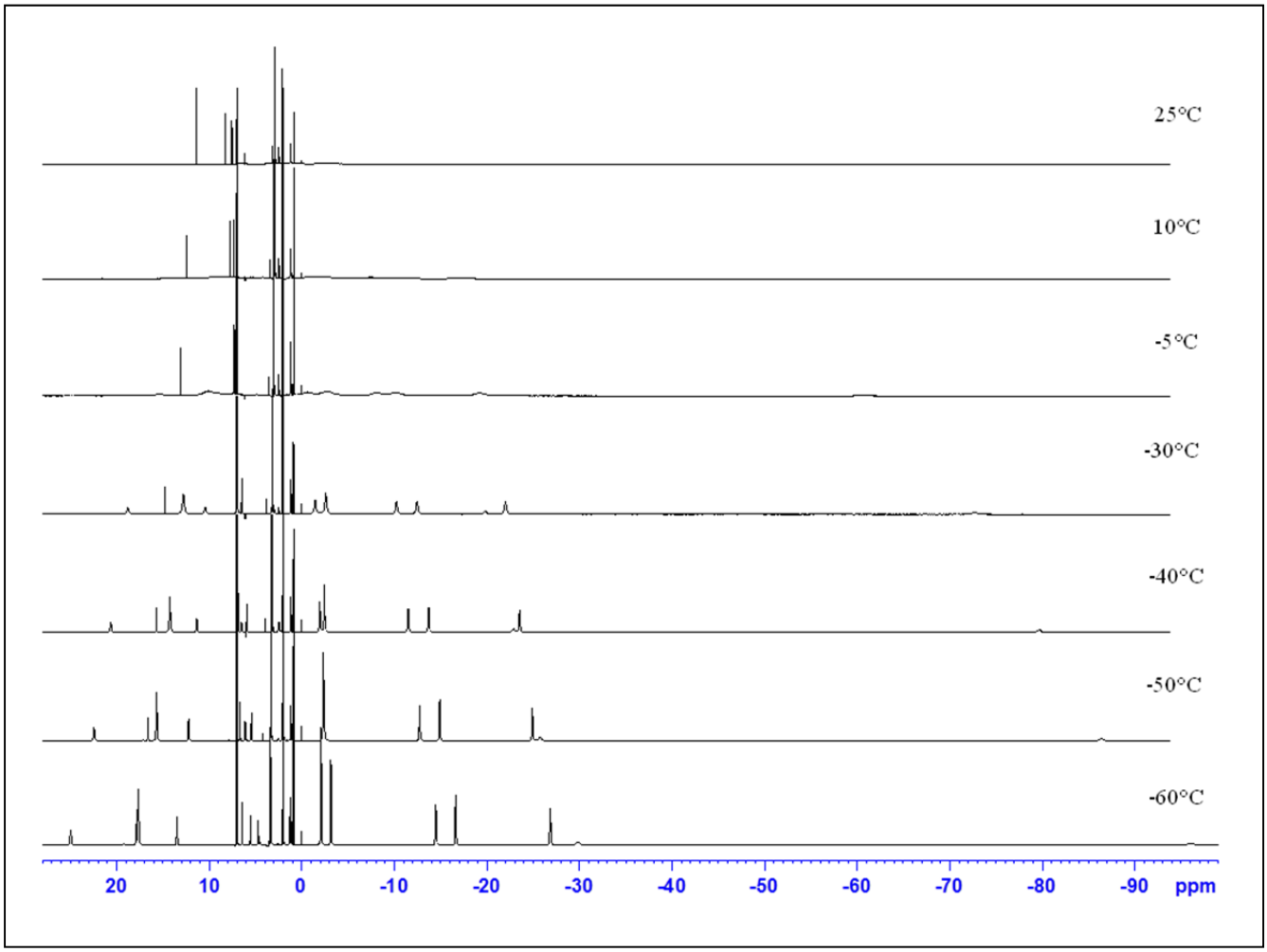


Figure S2. Variable Temperature ^{1}H NMR spectra of $[Li(THF)_x][(XA_2)U(CH_2SiMe_3)_3]$ (**3**; generated in situ from the reaction of **1** with $LiCH_2SiMe_3$) in THF-d_8 (500 MHz). Signals for U-CH_2 protons, which are located at very high (>100 ppm) and very low (<–100 ppm) frequencies, are not shown.

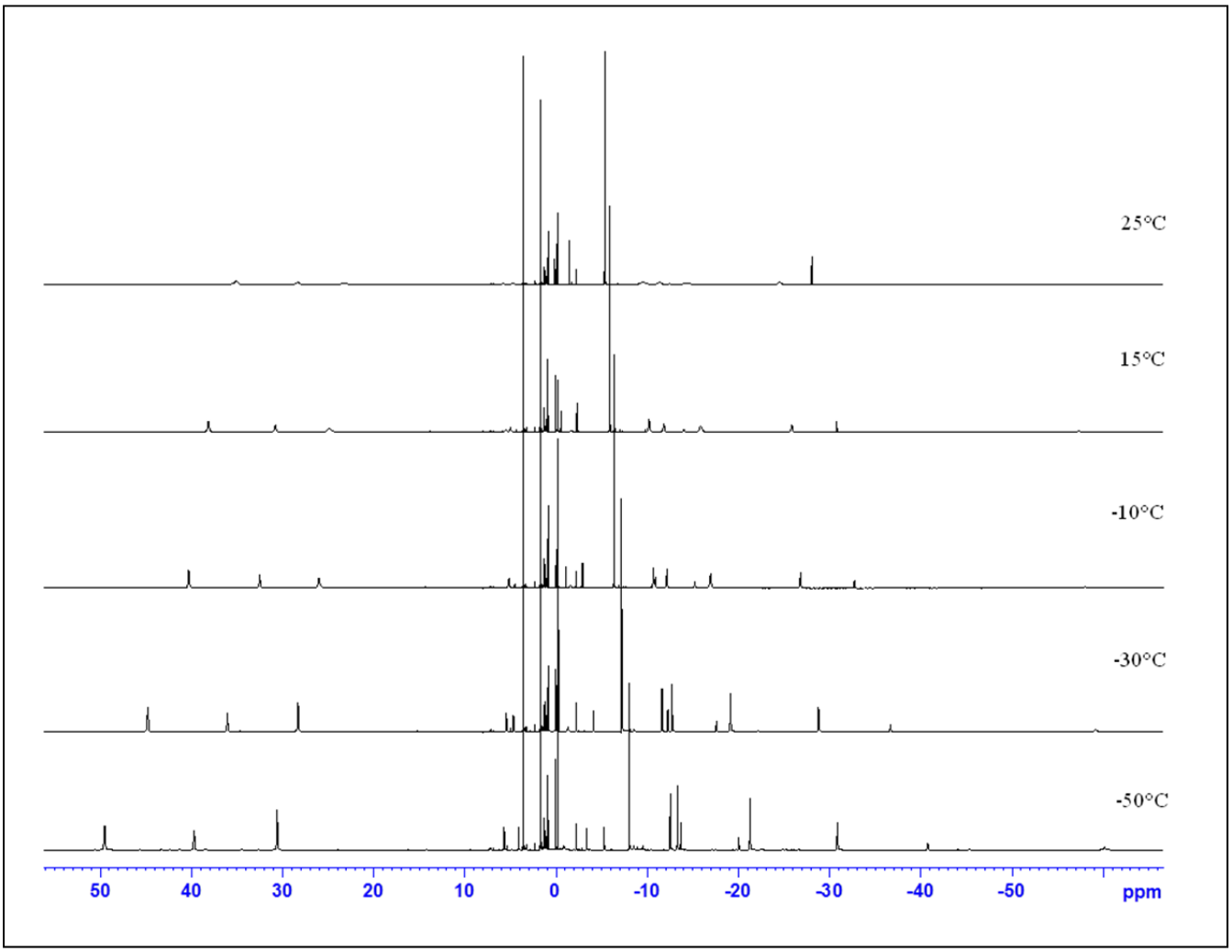


Figure S3. ^{1}H NMR spectrum of previously reported [$(XA_2)Th(CH_2SiMe_3)_2$] (**1-Th**) in toluene-d_8 (600 MHz, 25°C).

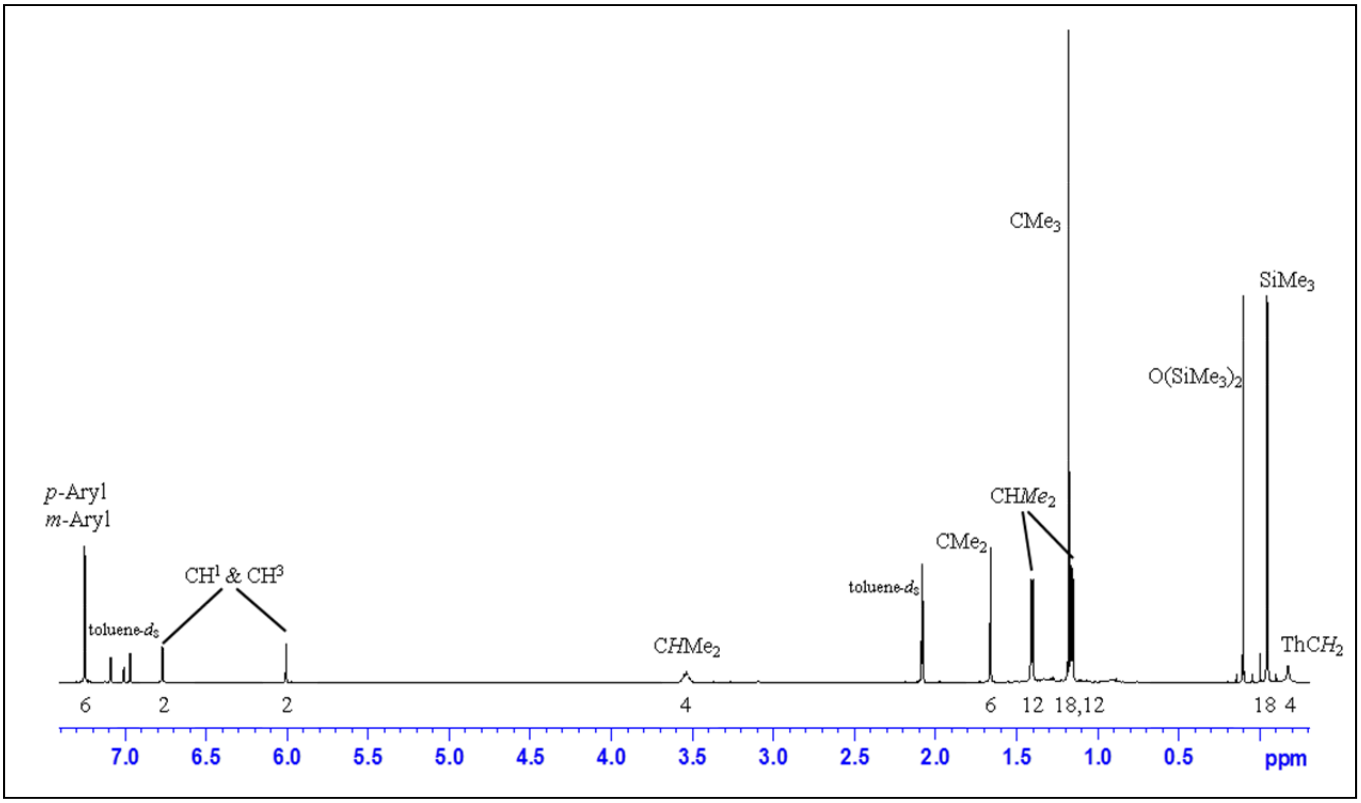
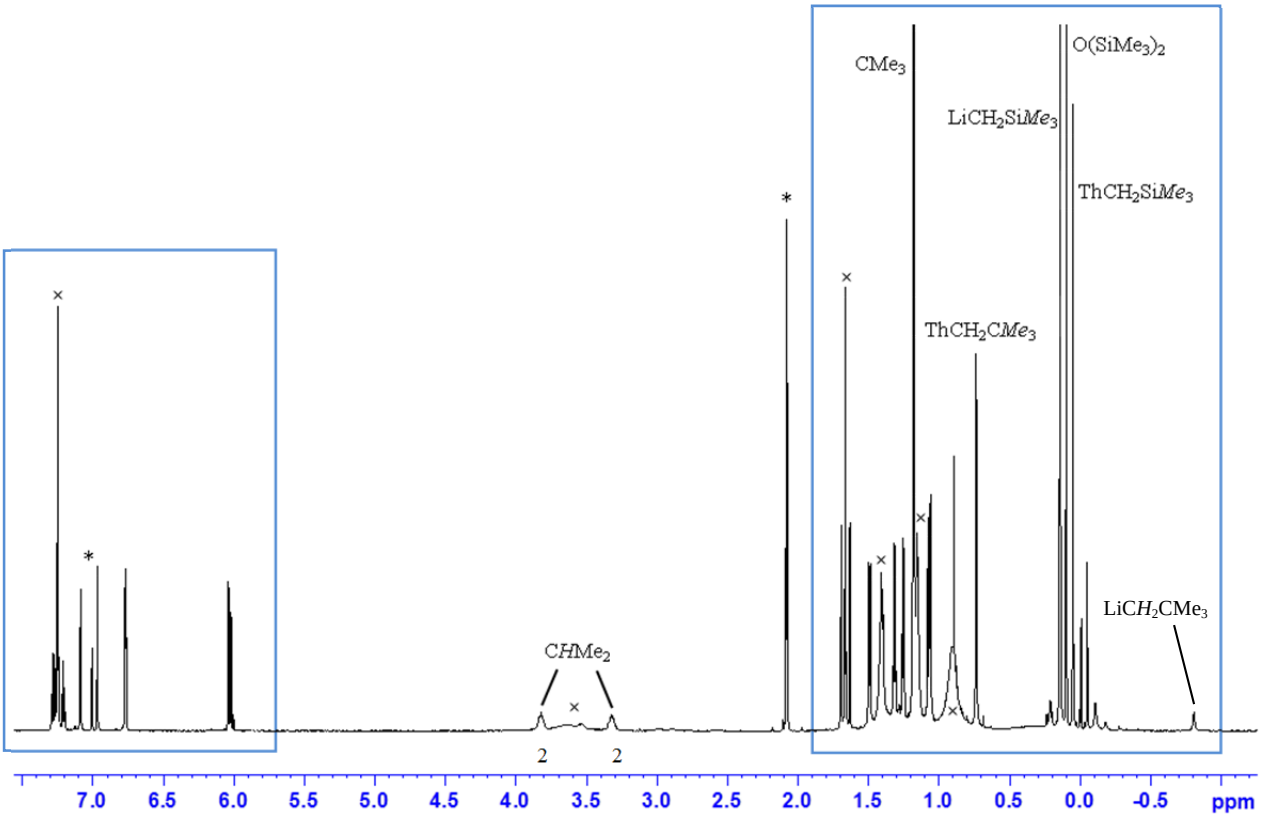
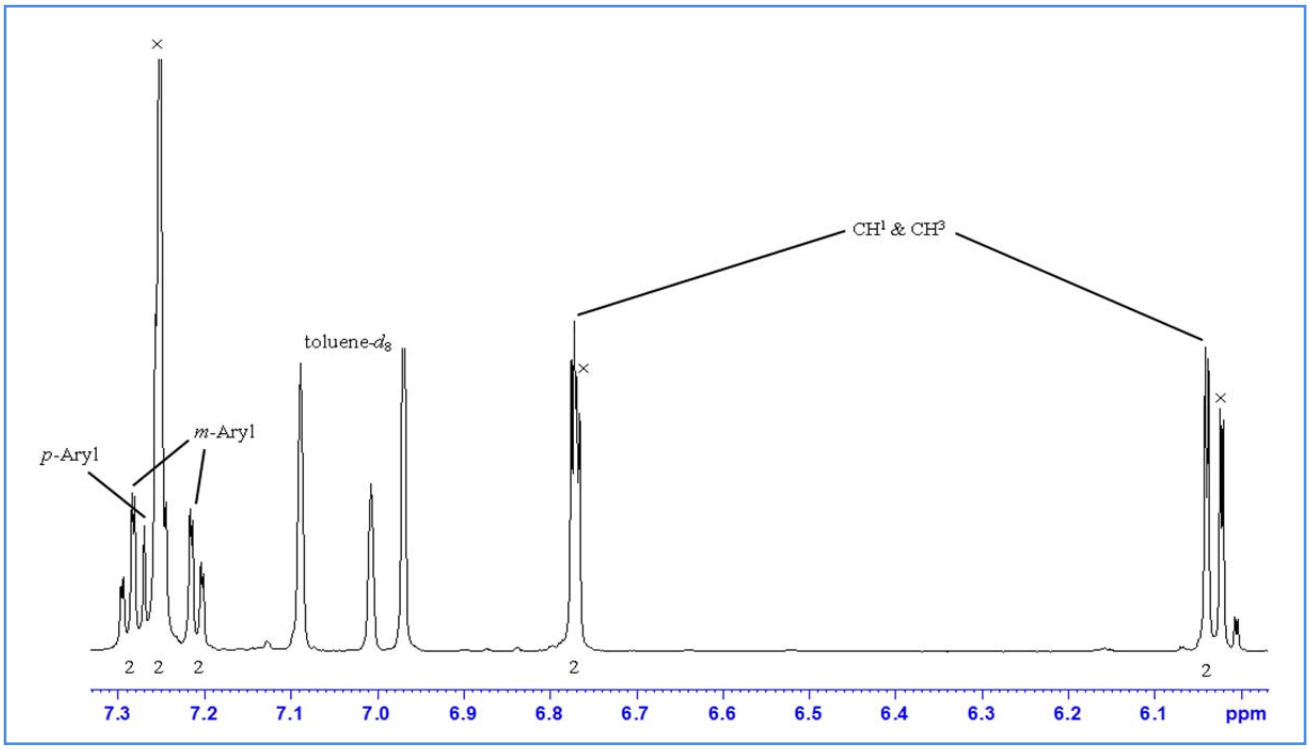


Figure S4. ^{1}H NMR spectrum (600 MHz, 25°C) of the reaction of [(XA$_2$)Th(CH$_2$SiMe$_3$)$_2$] (**1-Th**) with 2 equiv. LiCH$_2$CMe$_3$ in toluene-d_8 to give a 1:1:3:1 mixture of [(XA$_2$)Th(CH$_2$CMe$_3$)$_2$] (**2-Th**), [(XA$_2$)Th(CH$_2$SiMe$_3$)(CH$_2$CMe$_3$)] (**5-Th**), eliminated LiCH$_2$SiMe$_3$, and remaining LiCH$_2$CMe$_3$. Peaks for **5-Th** are identified in the spectrum below, and peaks are due to **2-Th** are identified with an × symbol (see also Figure S5) (* = toluene-d_8). Integration values are shown only for peaks due to **5-Th**.



See page 6 for zoomed-in regions

Figure S4 (continued)



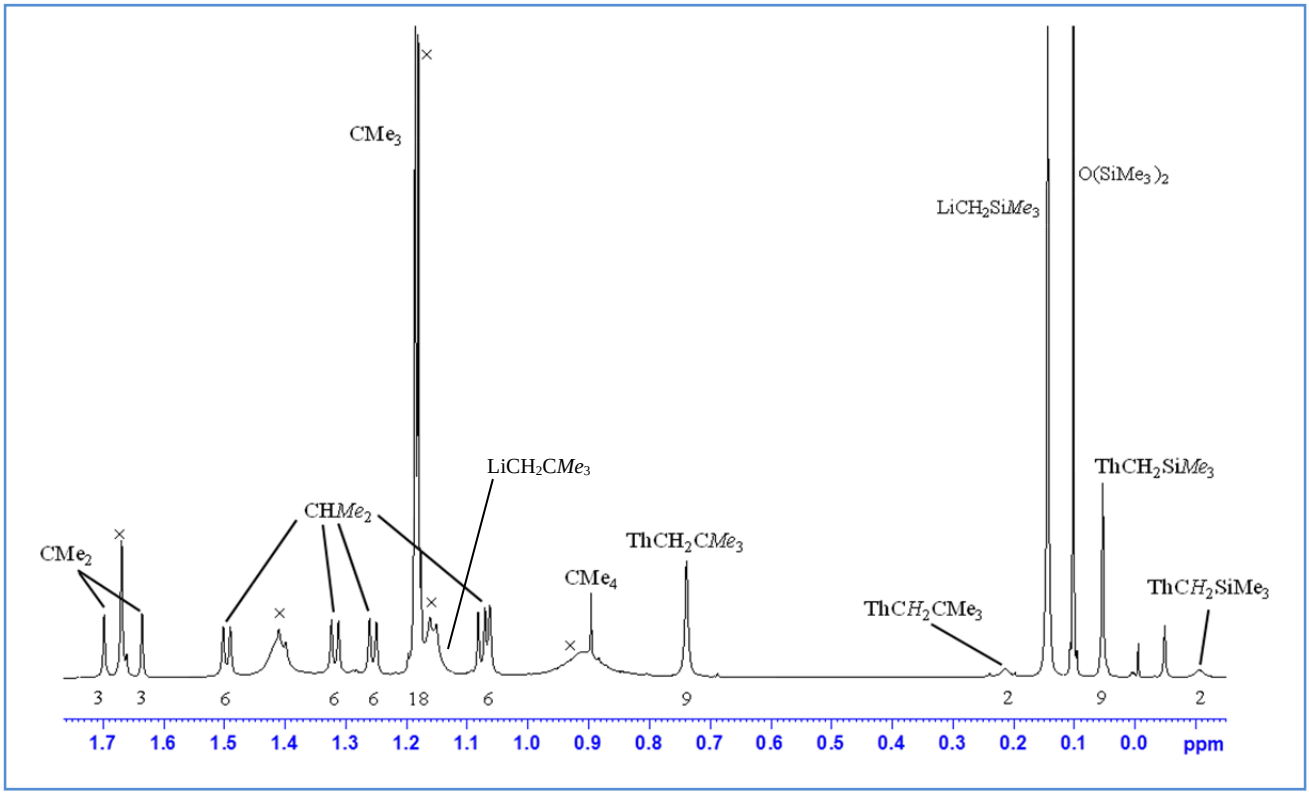


Figure S5. ^{1}H NMR spectrum (600 MHz, 25°C) of the reaction of $[(XA_2)Th(CH_2SiMe_3)_2]$ (**1-Th**) with 15 equiv. $LiCH_2CMe_3$ in toluene-d_8 to give $[(XA_2)Th(CH_2CMe_3)_2]$ (**2-Th**) and 2 equiv. of eliminated $LiCH_2SiMe_3$ (in addition to 13 equiv. of remaining $LiCH_2CMe_3$). Integration values are shown only for peaks due to **2-Th**. (* = toluene-d_8)

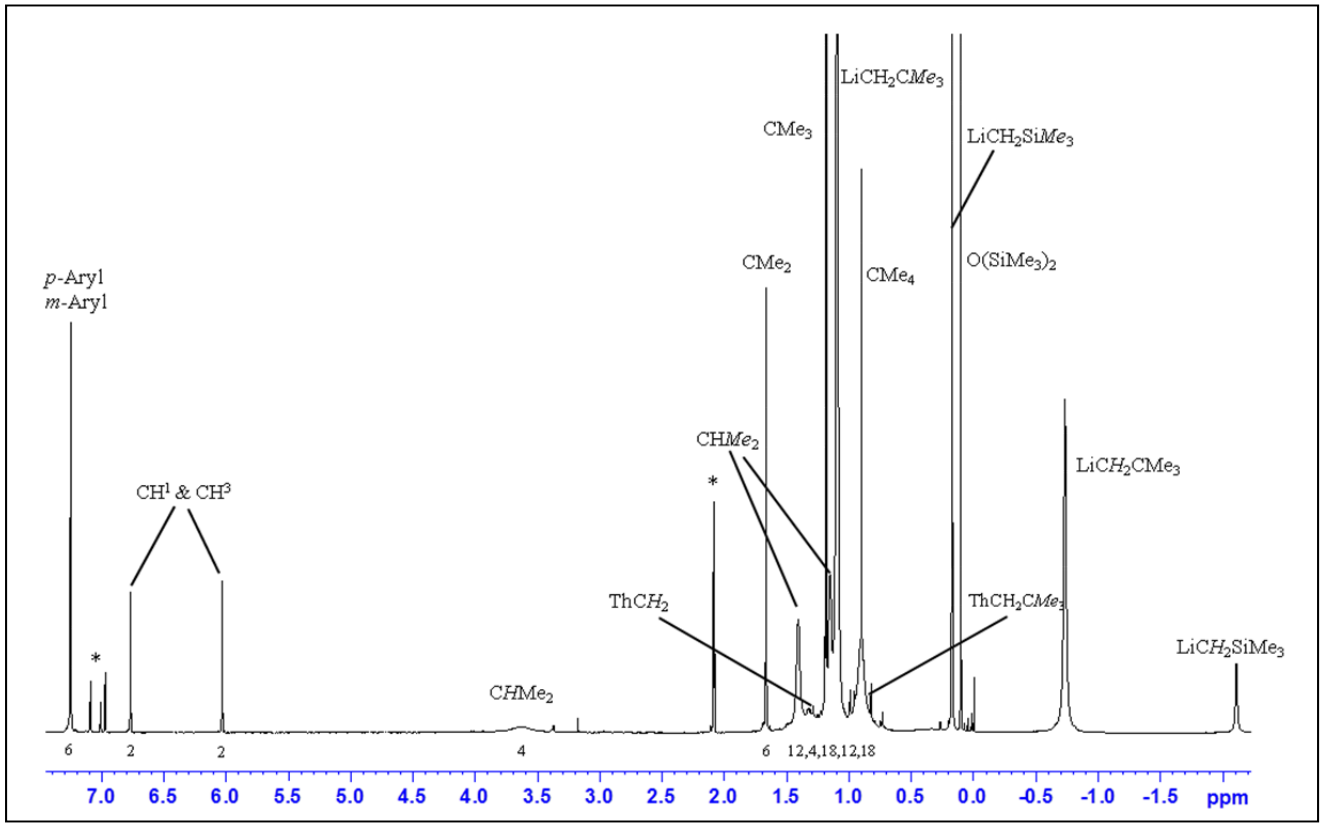


Figure S6. ^{1}H NMR spectrum of [Li(THF)$_x$][(XA$_2$)UMe$_3$] (**4**; generated in situ from the reaction of **1** with excess MeLi) in THF-d_8 (500 MHz, 25°C). Integration values are shown only for peaks due to **4**. Signals for U-CH_3 protons were not located between +400 and –400 ppm.