

Supporting Information for

Rare-earth metal bis(silylamide) complexes supported by mono-dentate arylamido ligand: synthesis, reactivity, and catalyst precursors in living *cis*-1,4- selective polymerization of isoprene

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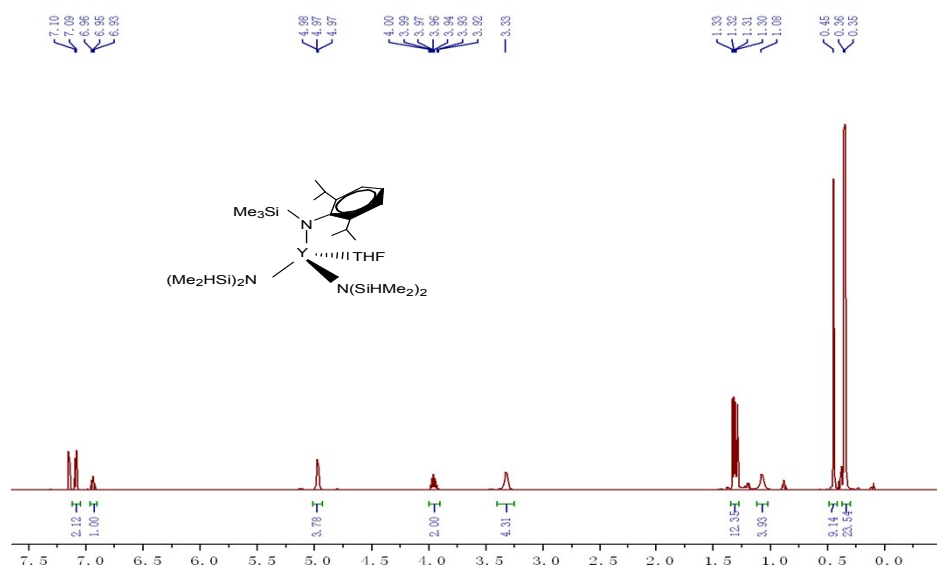
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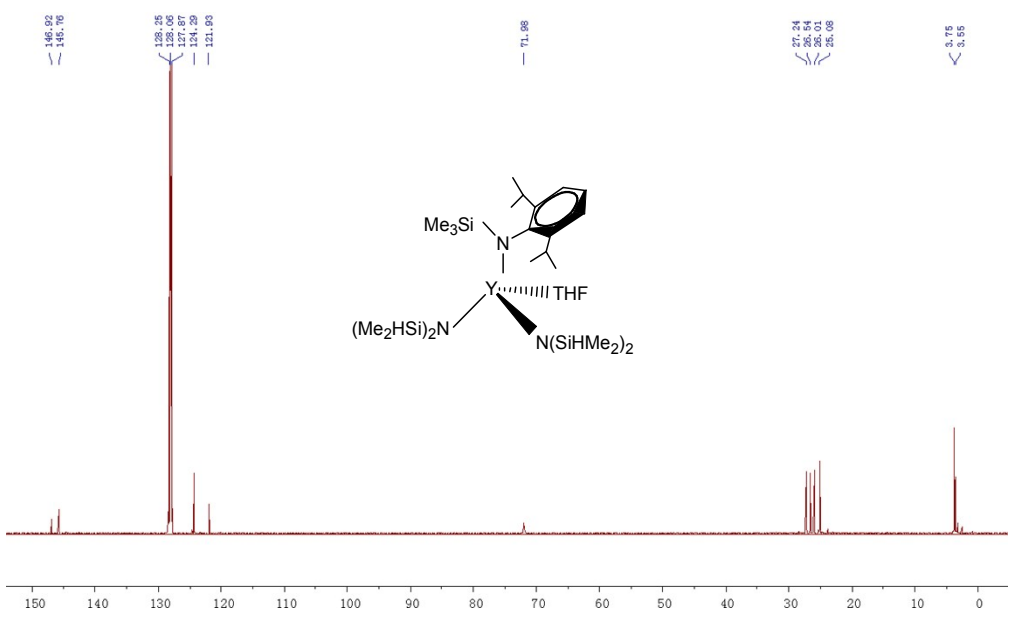
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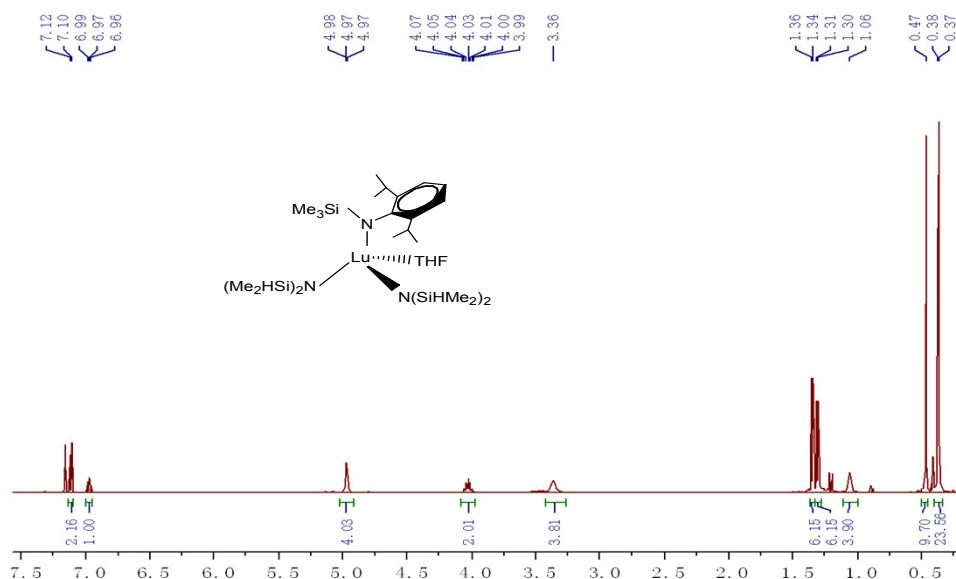
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SFig. 15. GPC curve of representative polymer



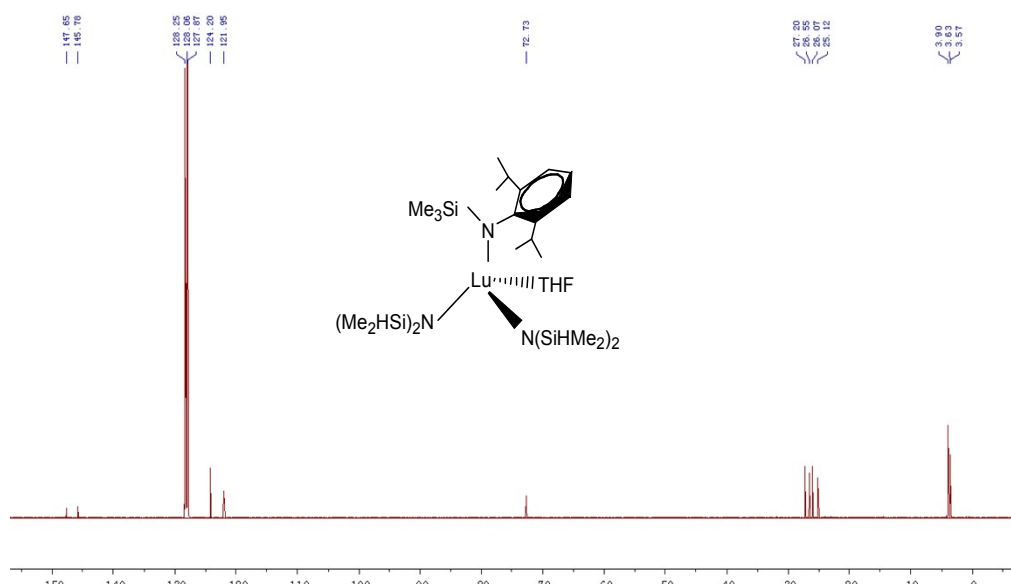
SFig. 1. ^1H NMR spectrum of $[2,6\text{-}i\text{Pr}_2\text{C}_6\text{H}_3\text{N}(\text{SiMe}_3)]\text{Y}[\text{N}(\text{SiHMe}_2)_2]_2(\text{THF})$ (1)



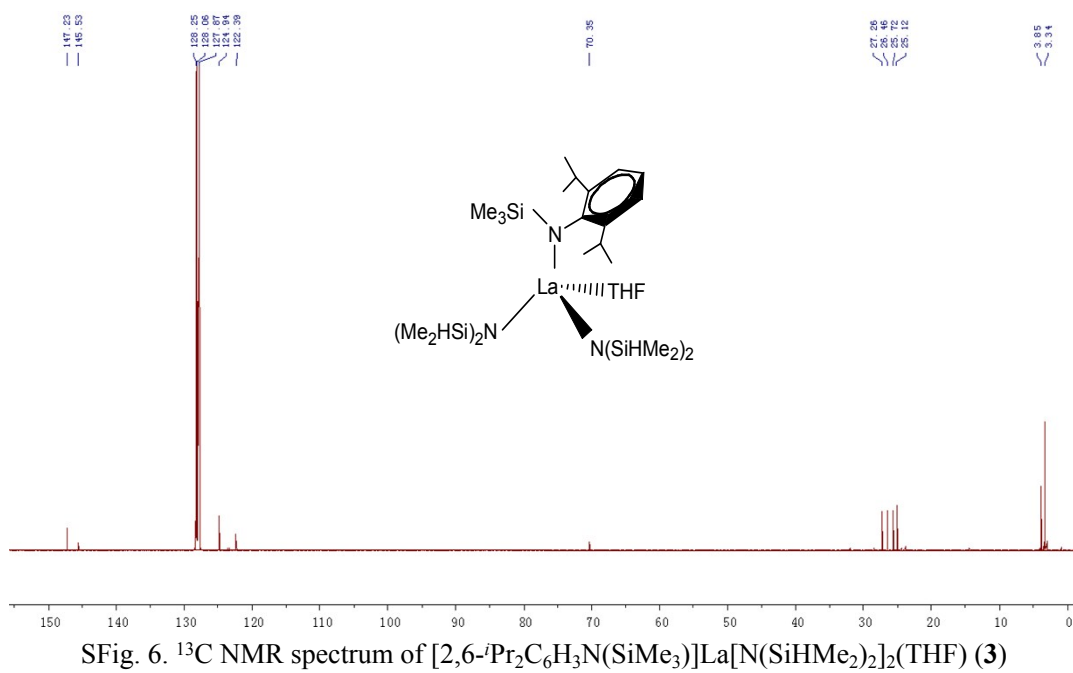
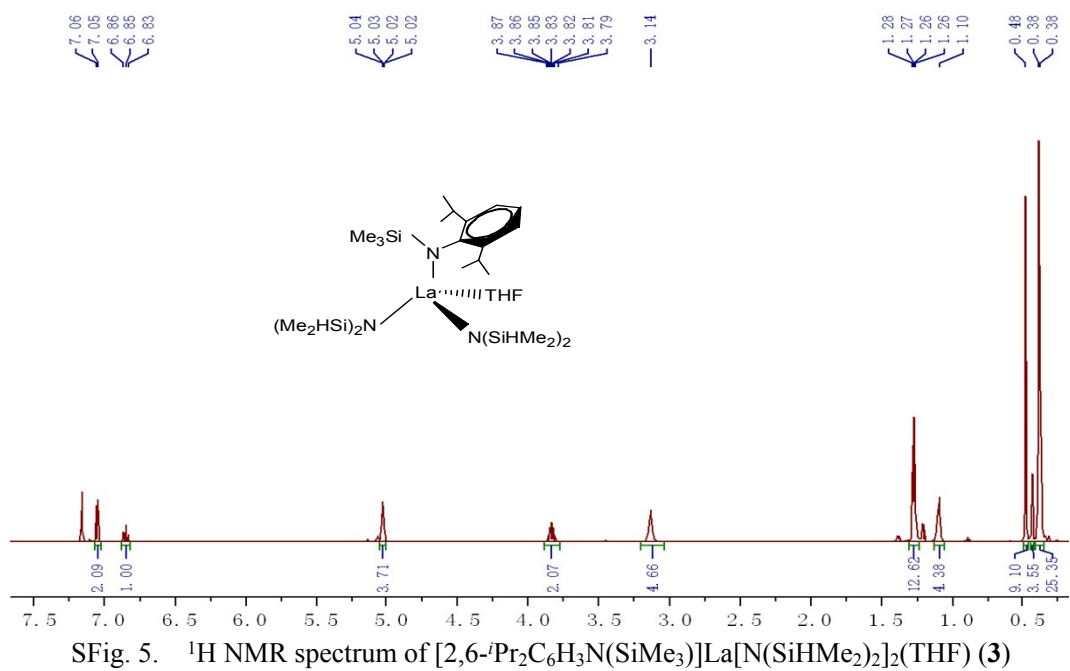
SFig. 2. ^{13}C NMR spectrum of $[2,6\text{-}i\text{Pr}_2\text{C}_6\text{H}_3\text{N}(\text{SiMe}_3)]\text{Y}[\text{N}(\text{SiHMe}_2)_2]_2(\text{THF})$ (1)

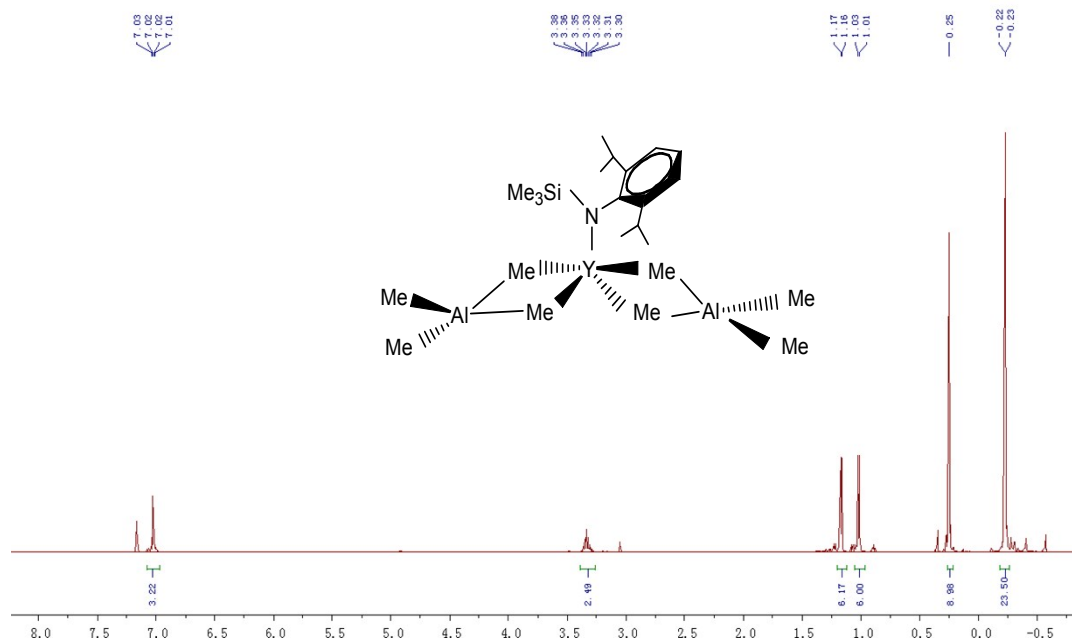


Sfig. 3. ¹H NMR spectrum of [2,6-*Pr*₂C₆H₃N(SiMe₃)]Lu[N(SiHMe₂)₂]₂(THF) (2)

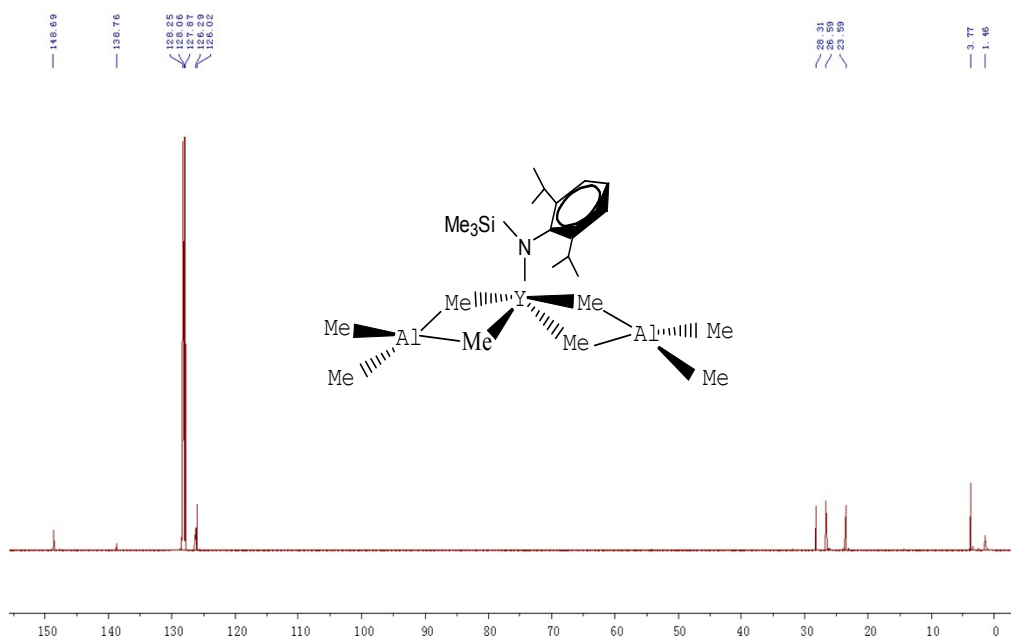


Sfig. 4. ¹³C NMR spectrum of [2,6-*Pr*₂C₆H₃N(SiMe₃)]Lu[N(SiHMe₂)₂]₂(THF) (2)

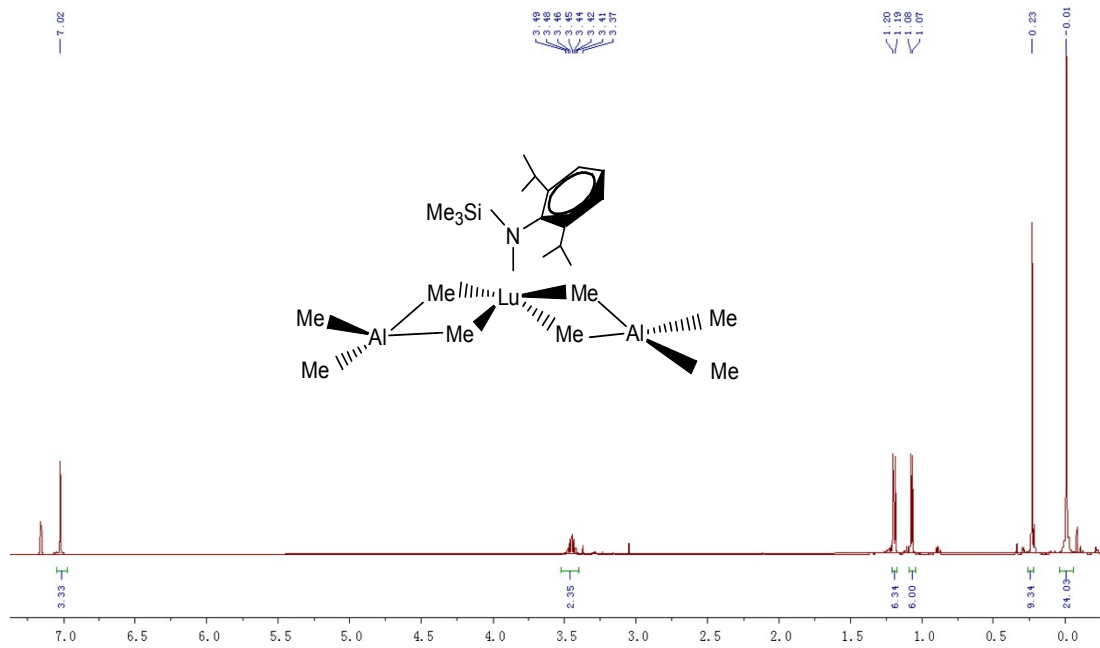




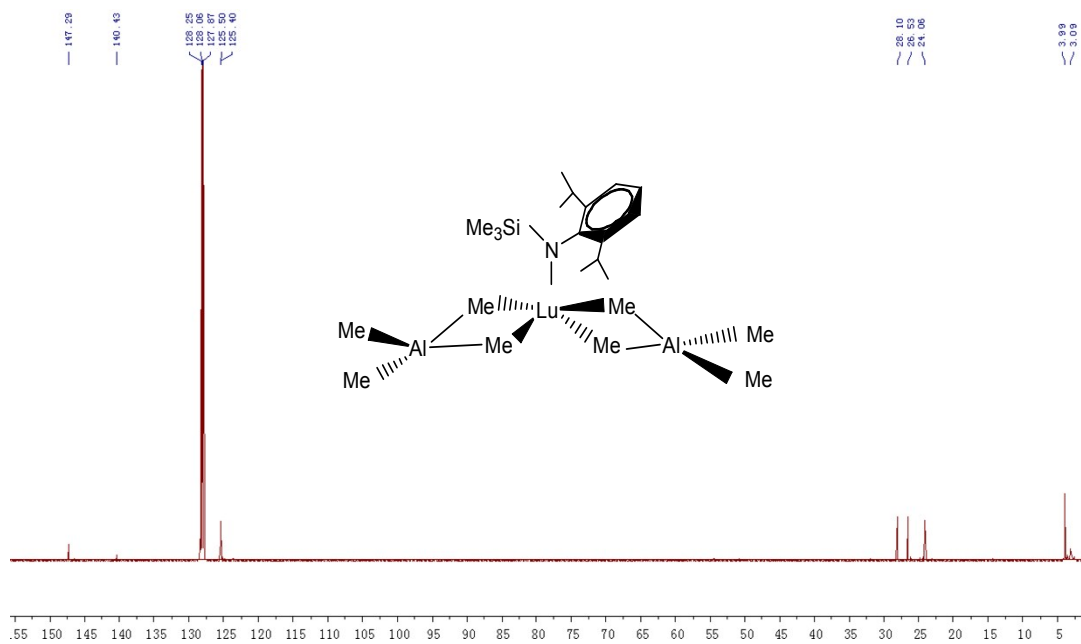
SFig. 7. ^1H NMR spectrum of $[2,6\text{-}i\text{Pr}_2\text{C}_6\text{H}_3\text{N}(\text{SiMe}_3)]\text{Y}[(\mu\text{-Me})_2\text{AlMe}_2]_2$ (4)



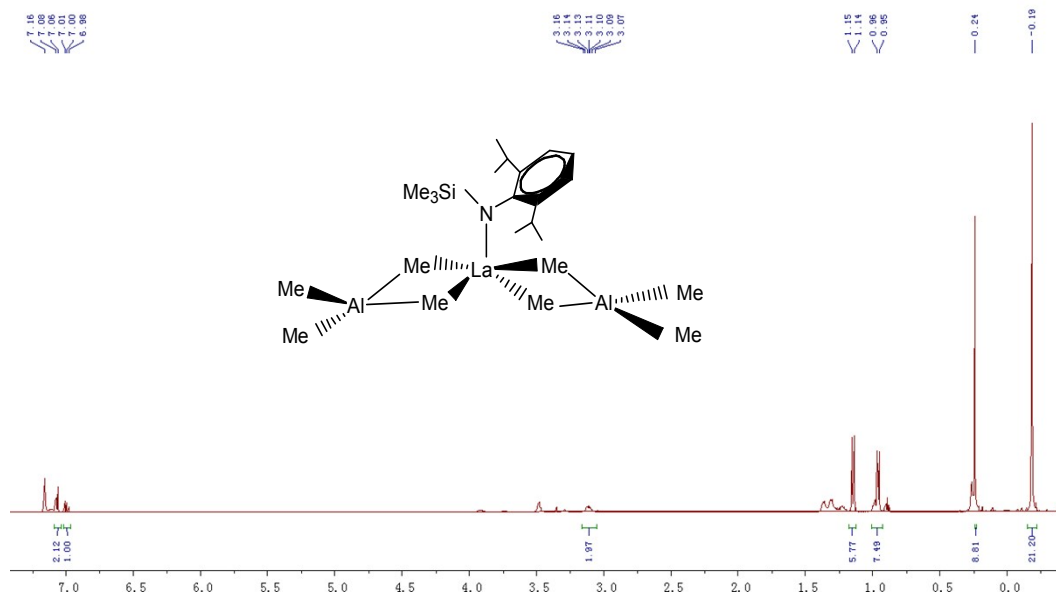
SFig. 8. ^{13}C NMR spectrum of $[2,6\text{-}i\text{Pr}_2\text{C}_6\text{H}_3\text{N}(\text{SiMe}_3)]\text{Y}[(\mu\text{-Me})_2\text{AlMe}_2]_2$ (4)



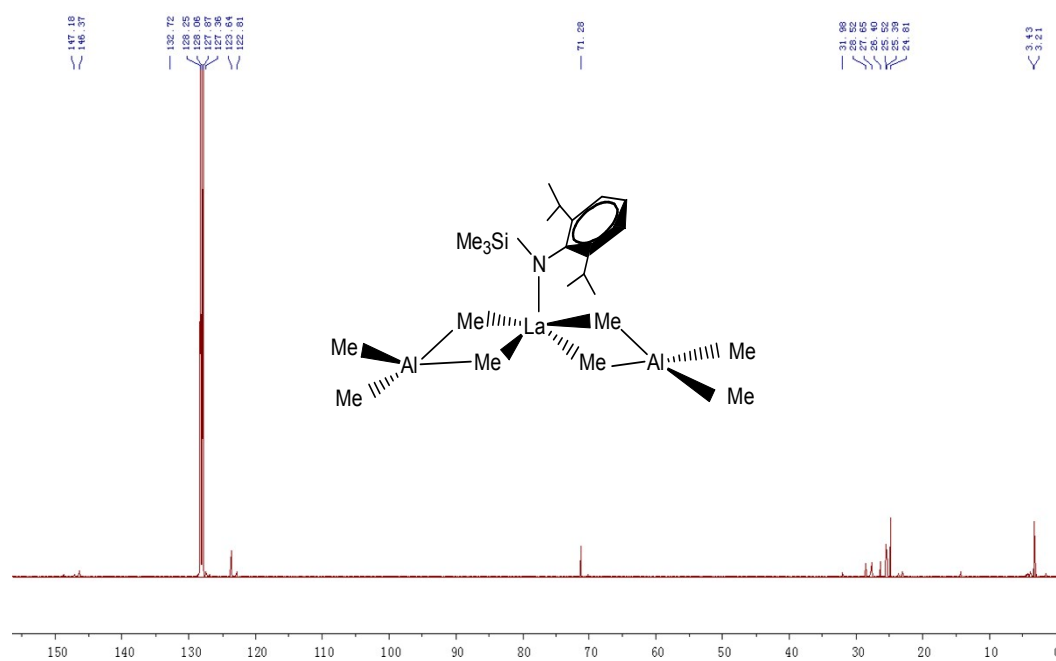
SFig. 9. ¹H NMR spectrum of [2,6-*i*-Pr₂C₆H₃N(SiMe₃)]Lu[(μ-Me)₂AlMe₂]₂ (**5**)



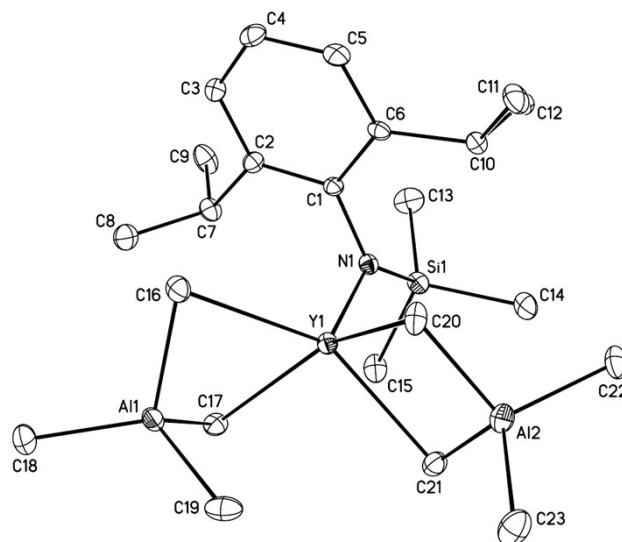
SFig. 10. ¹³C NMR spectrum of [2,6-*i*-Pr₂C₆H₃N(SiMe₃)]Lu[(μ-Me)₂AlMe₂]₂ (**5**)



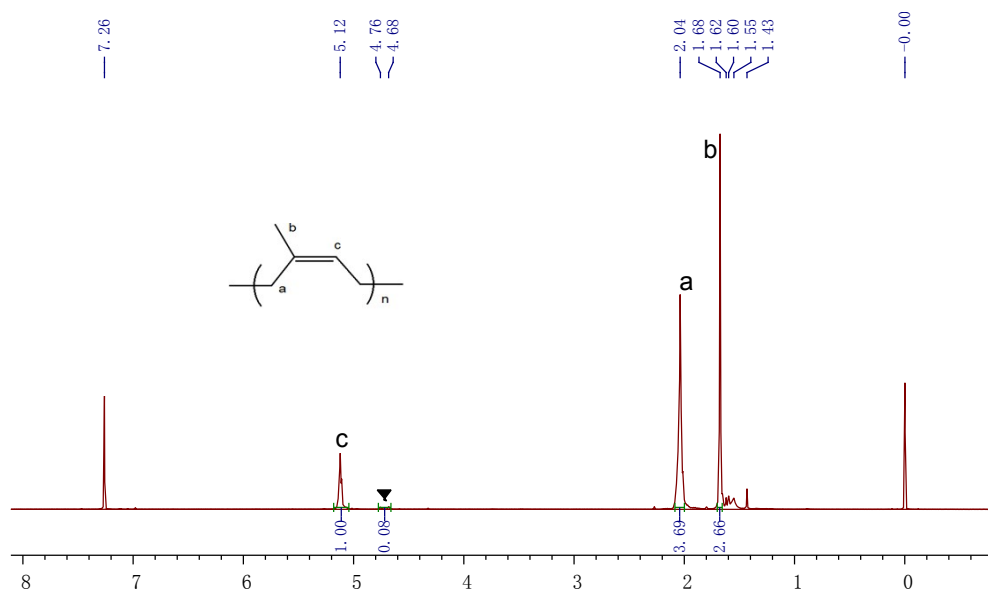
SFig. 11. ^1H NMR spectrum of $[2,6\text{-}i\text{Pr}_2\text{C}_6\text{H}_3\text{N}(\text{SiMe}_3)]\text{La}[(\mu\text{-Me})_2\text{AlMe}_2]_2$ (6)



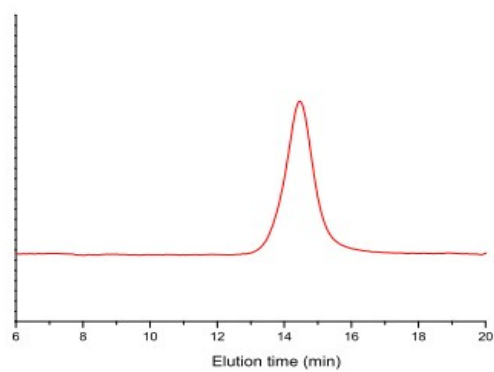
SFig. 12 ^{13}C NMR spectrum of $[2,6\text{-}i\text{Pr}_2\text{C}_6\text{H}_3\text{N}(\text{SiMe}_3)]\text{La}[(\mu\text{-Me})_2\text{AlMe}_2]_2$ (6)



SFig. 13. Molecular structure of **4**. Hydrogen atoms (except those on SiH) are omitted for clarity.



SFig. 14. ^1H NMR spectrum of representative polymer



SFig. 15. GPC curve of representative polymer