Supporting Information

Preparation of octahydro- and tetrahydro-[1,10]phenanthroline zirconium and hafnium complexes for olefin polymerization

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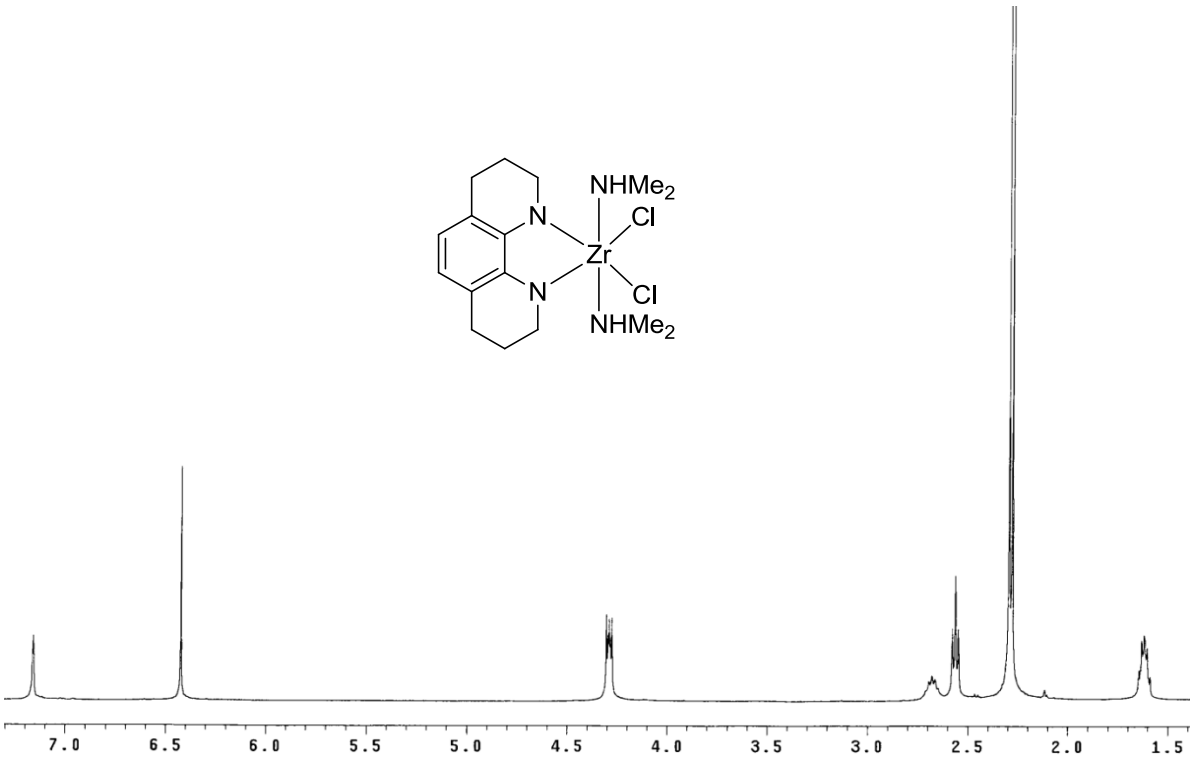
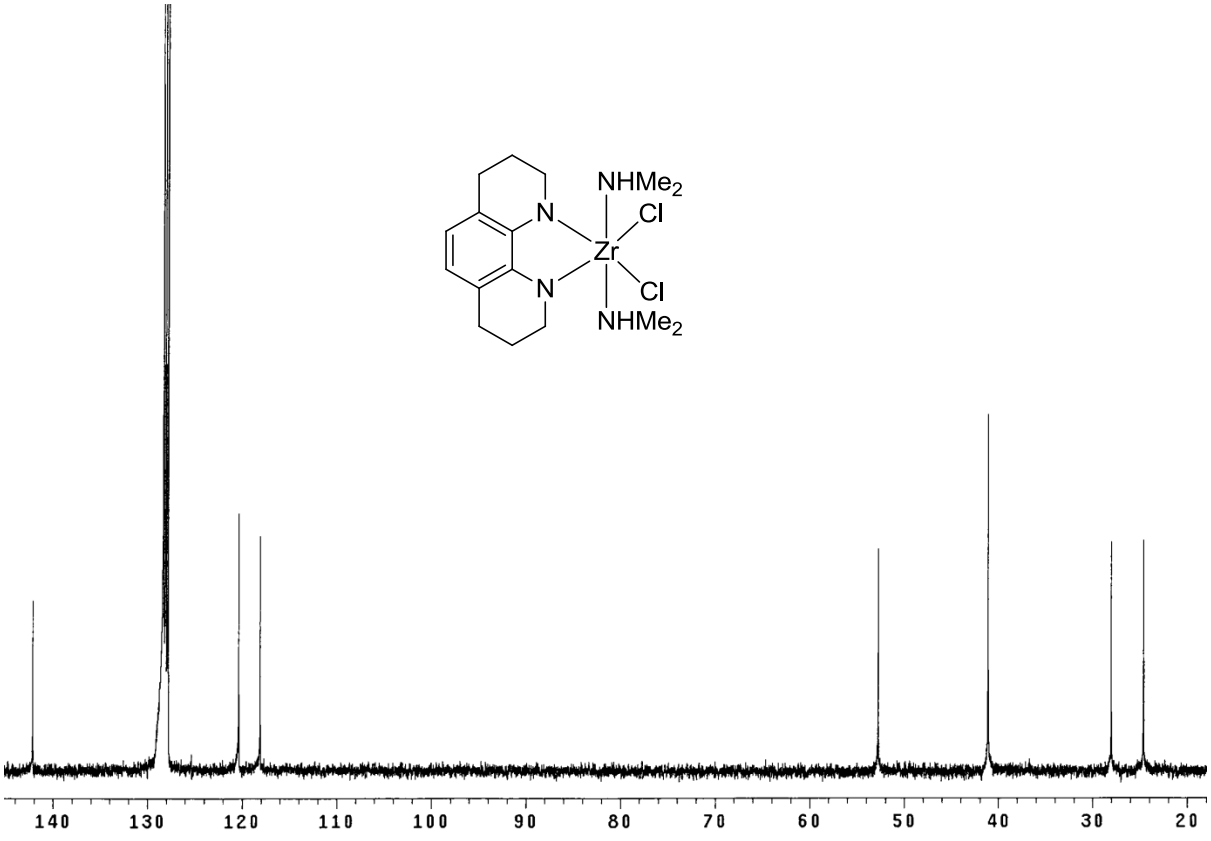
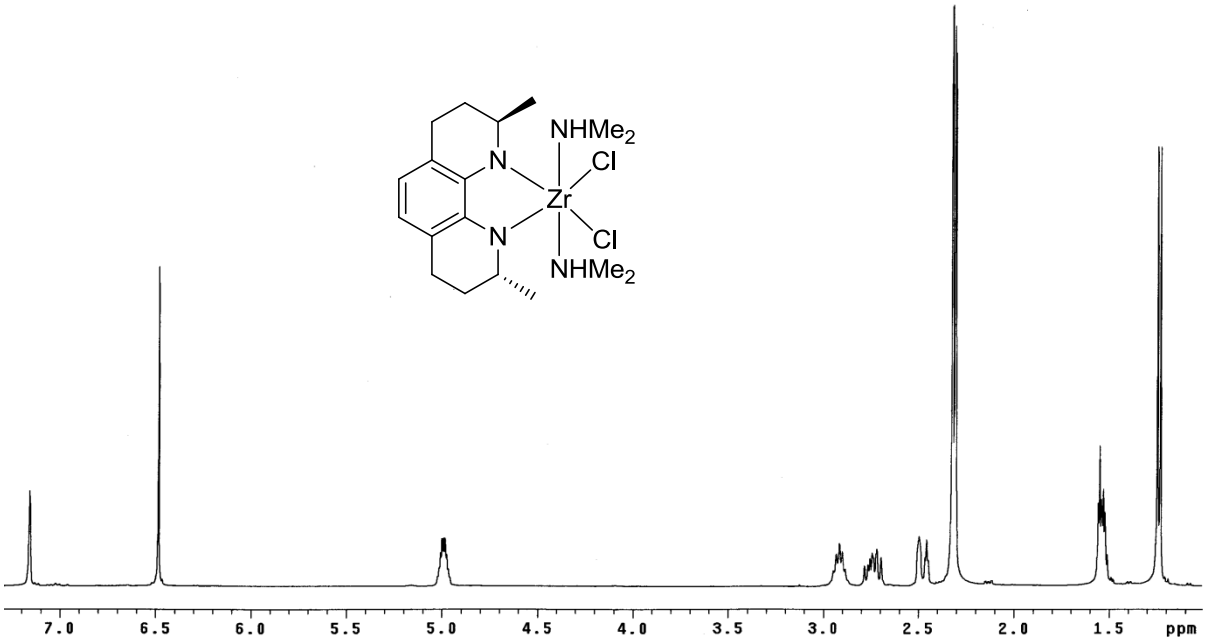
<[1]H NMR spectrum of **4** in C_6D_6>



<[13]C NMR spectrum of **4** in C_6D_6>



<[1]H NMR spectrum of **5** in C_6D_6>



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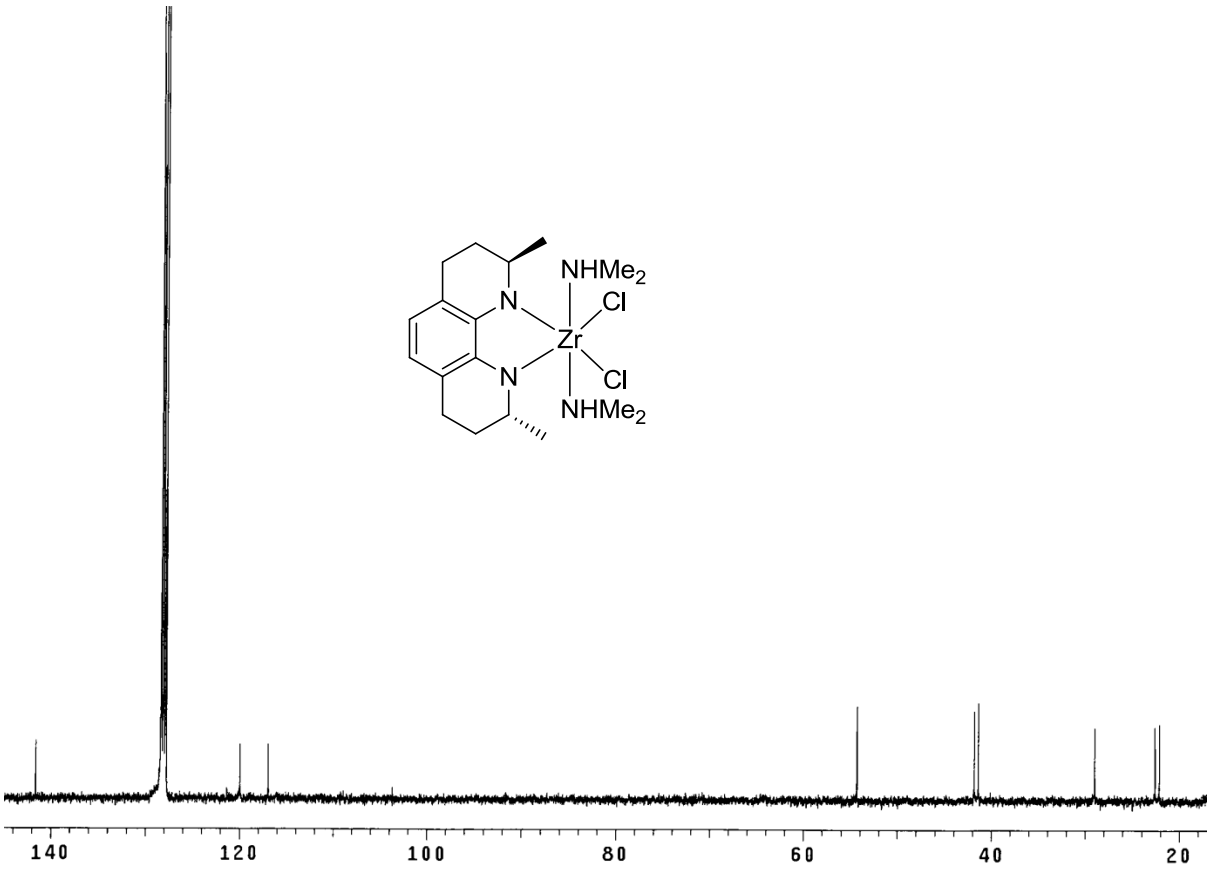
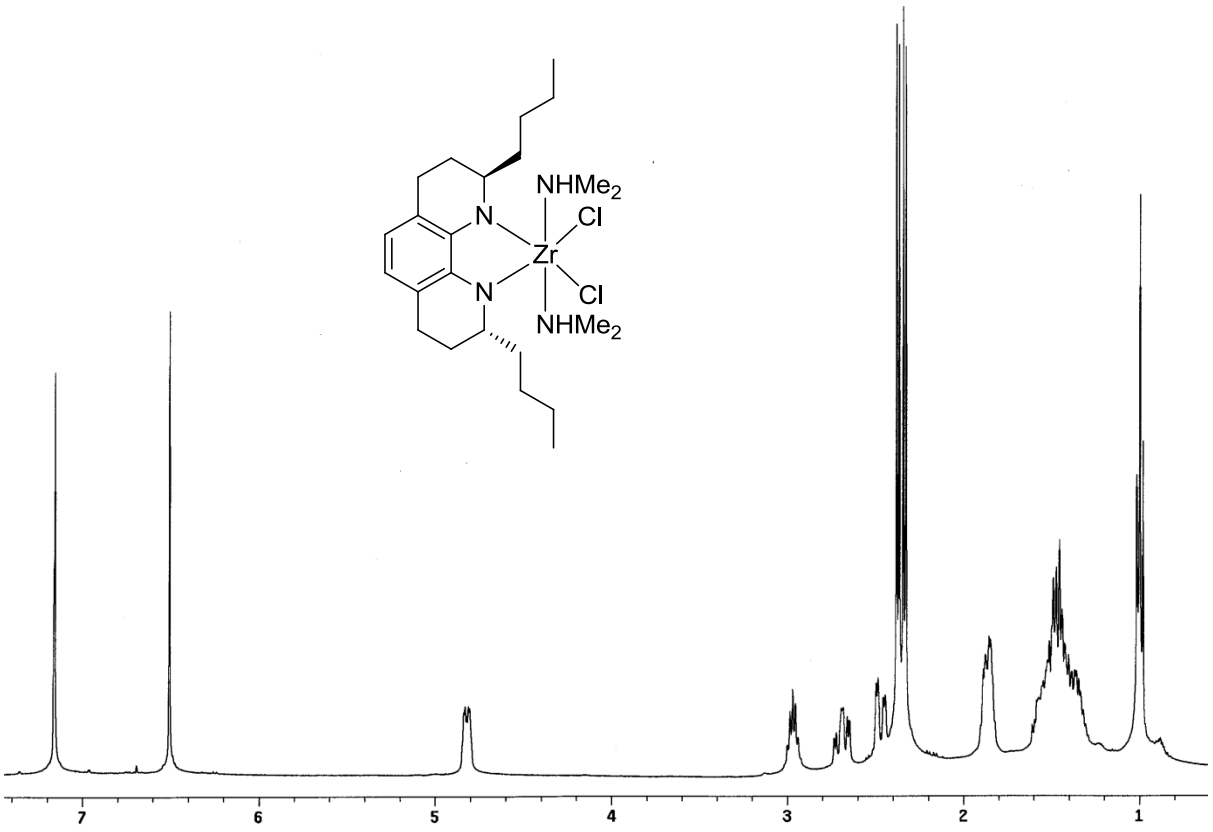
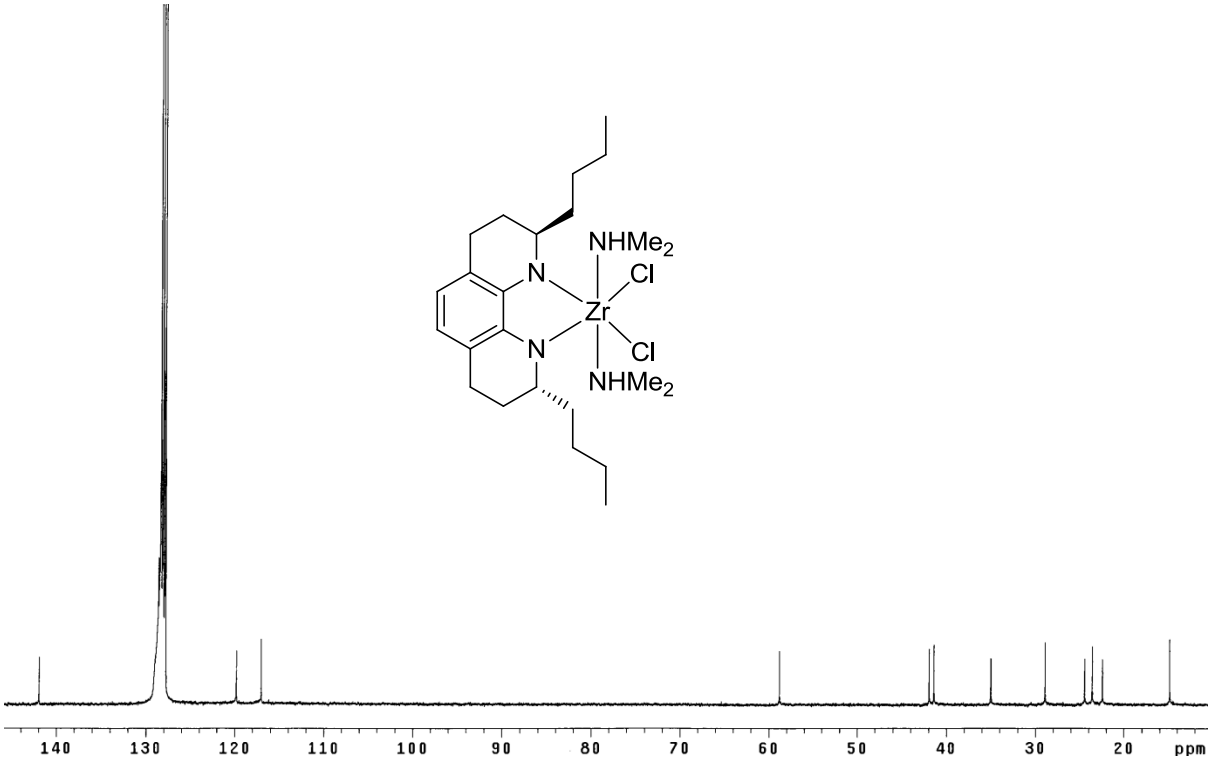


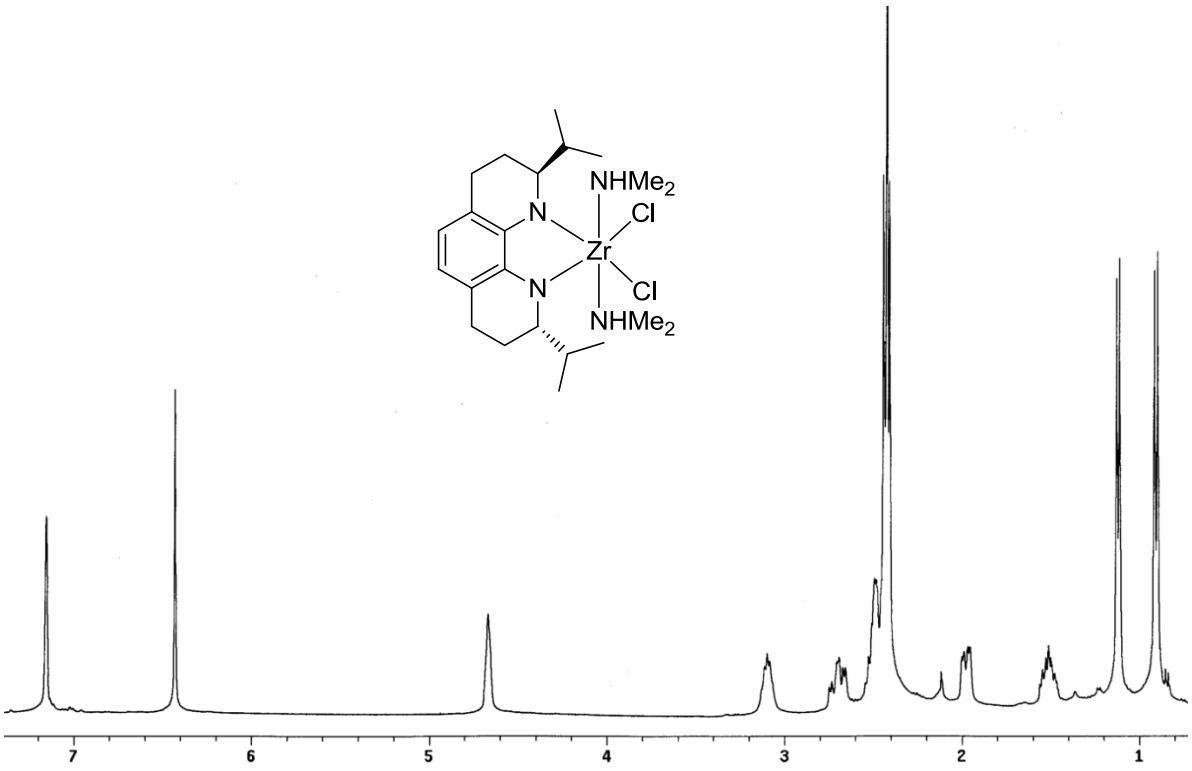
<[1]H NMR spectrum of **6** in C_6D_6>



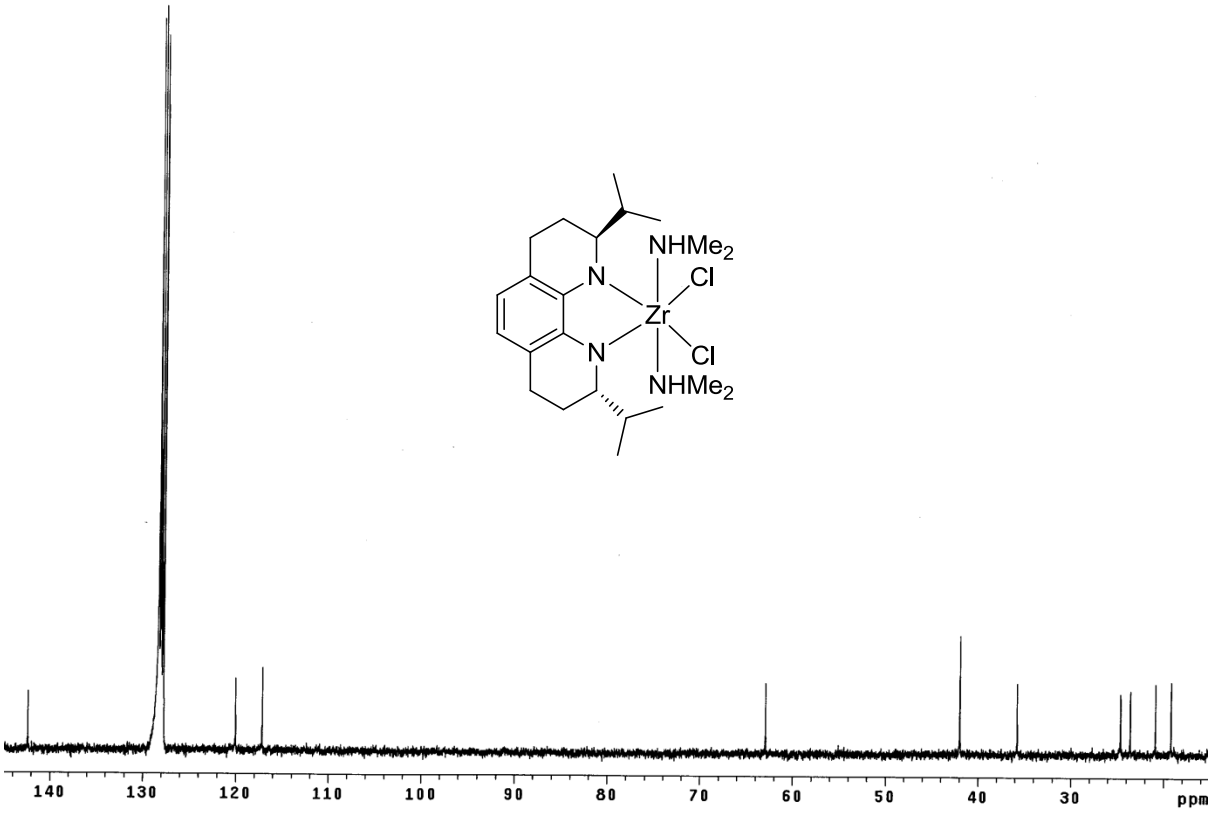
<[13]C NMR spectrum of **6** in C_6D_6>



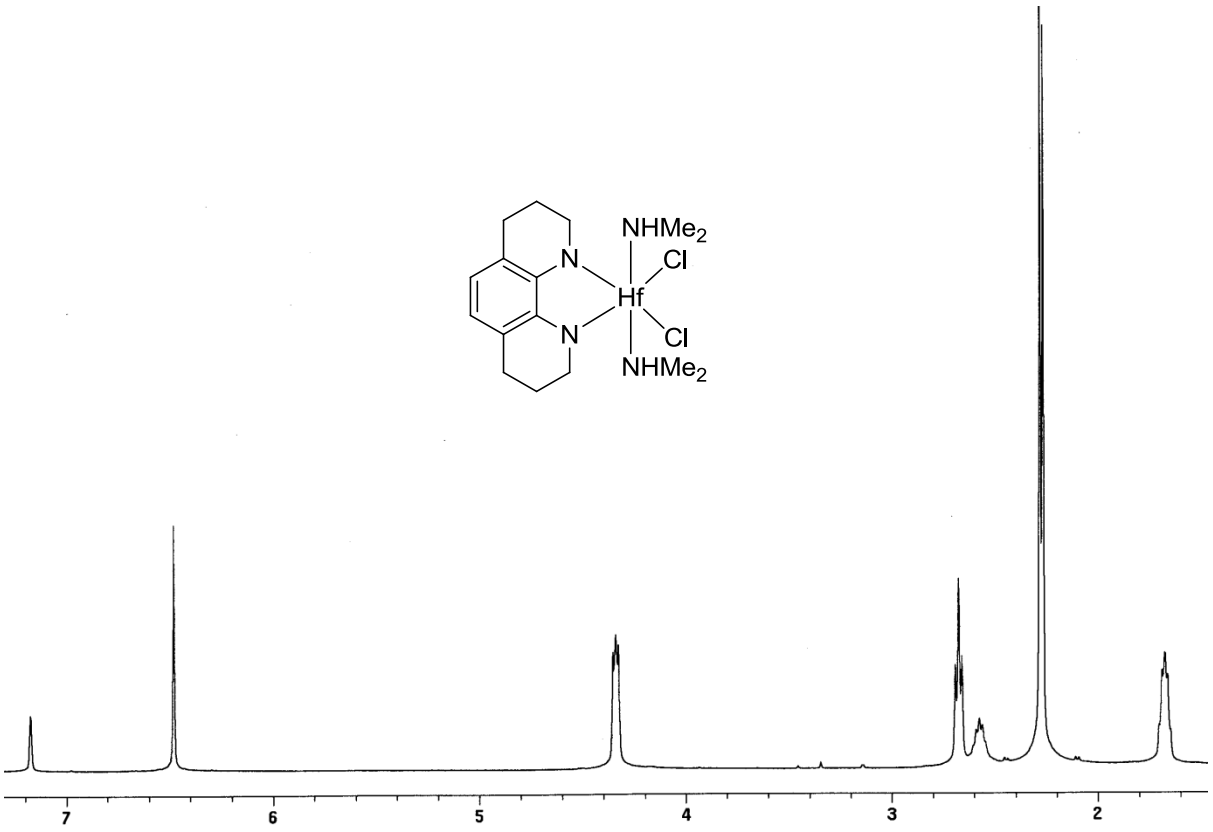
<[1]H NMR spectrum of **7** in C_6D_6>



<[13]C NMR spectrum of **7** in C_6D_6>



<[1]H NMR spectrum of **8** in C_6D_6>



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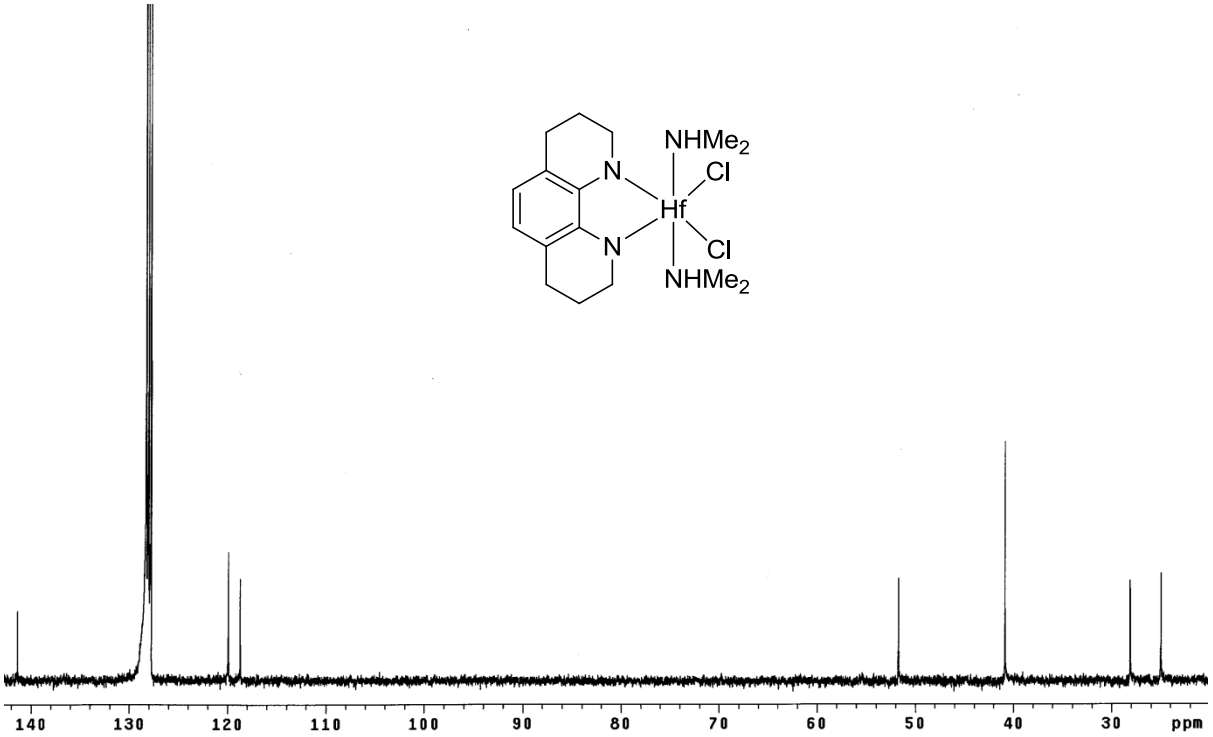
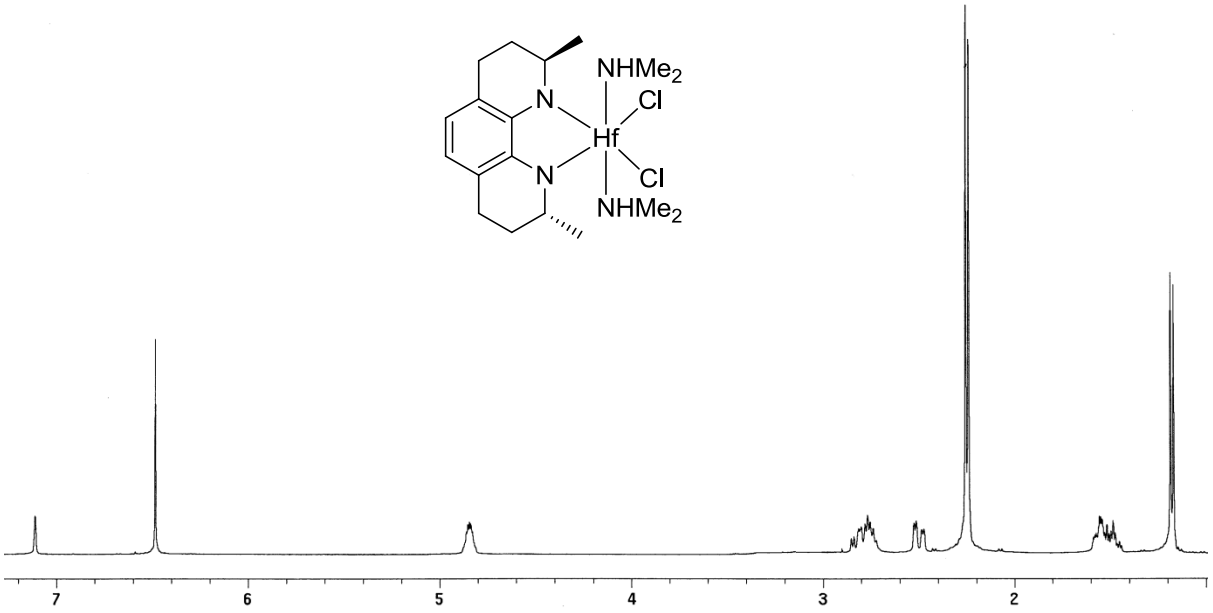
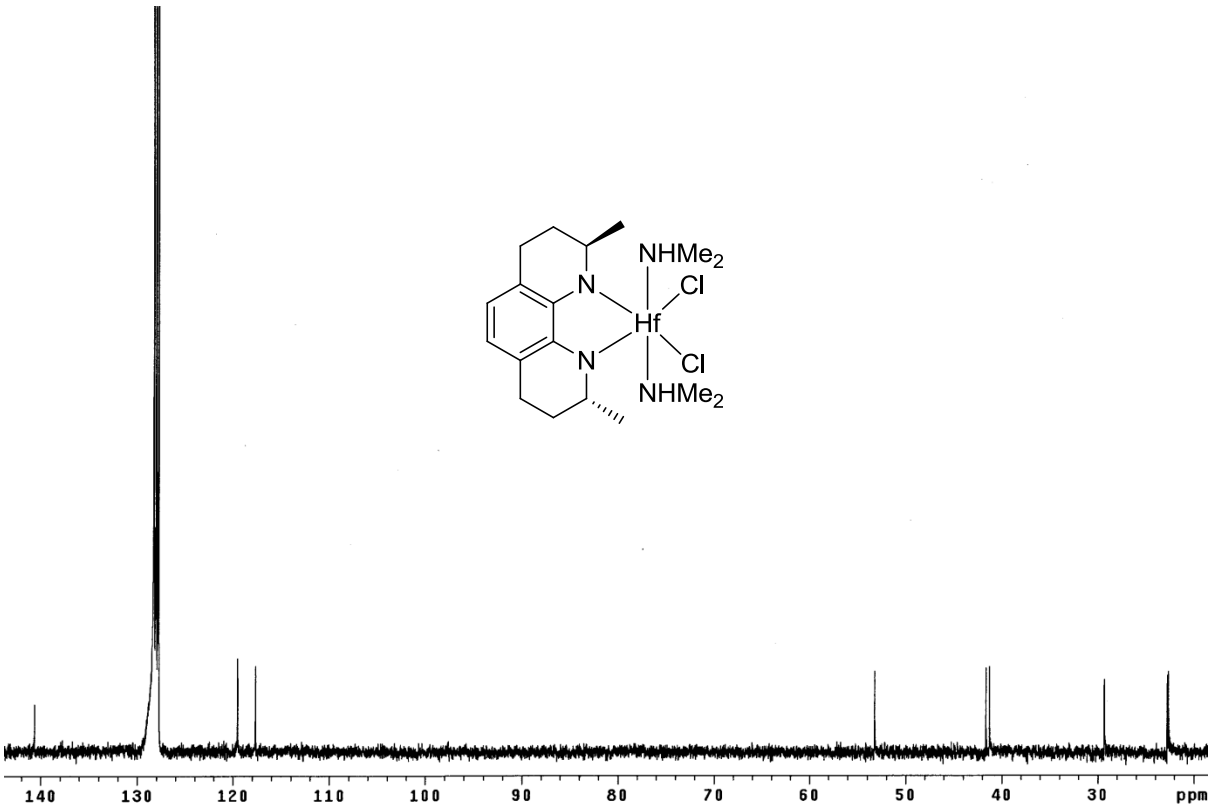


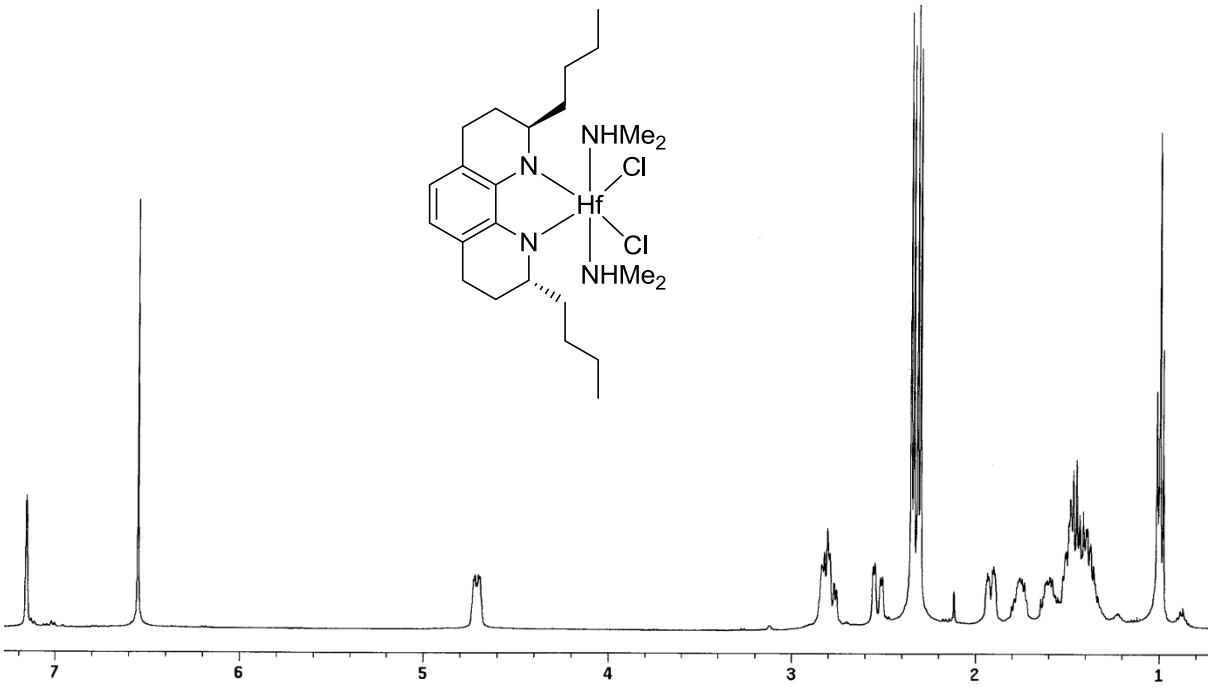
<[1]H NMR spectrum of **9** in C_6D_6>



<[13]C NMR spectrum of **9** in C_6D_6>



<[1]H NMR spectrum of **10** in C_6D_6>



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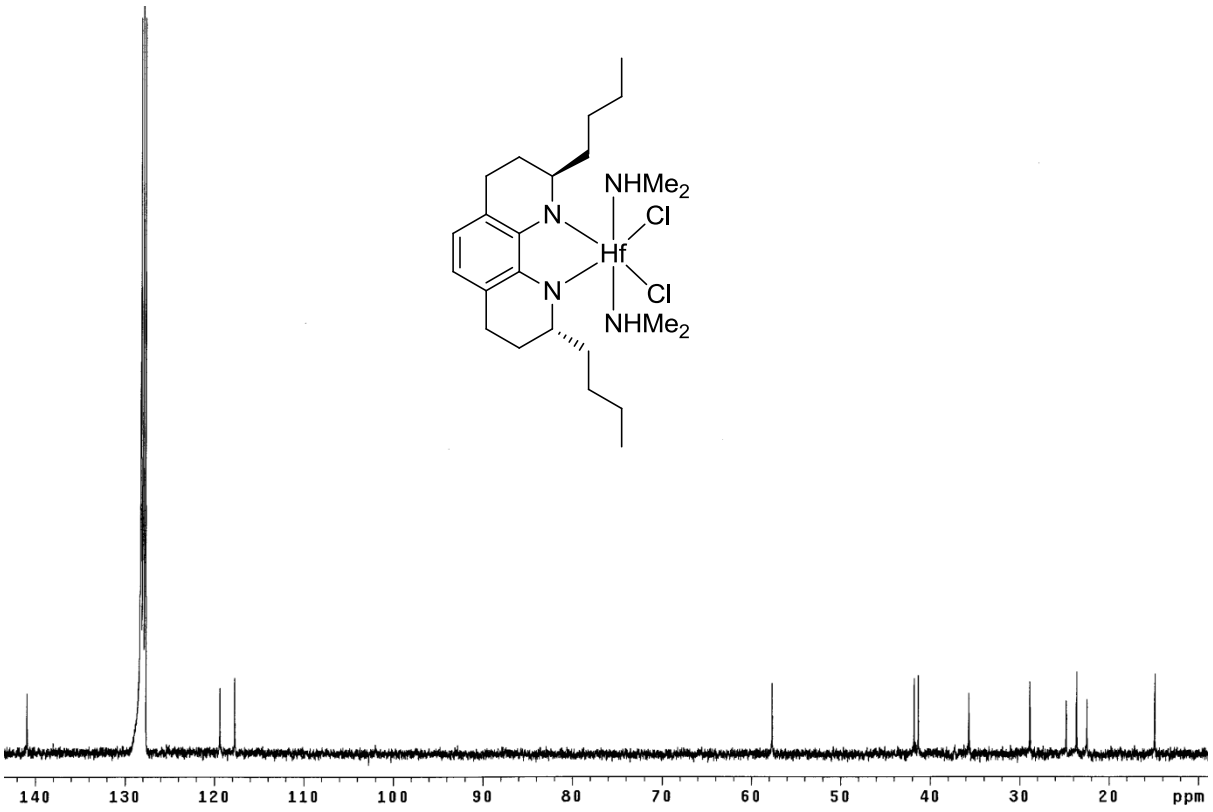
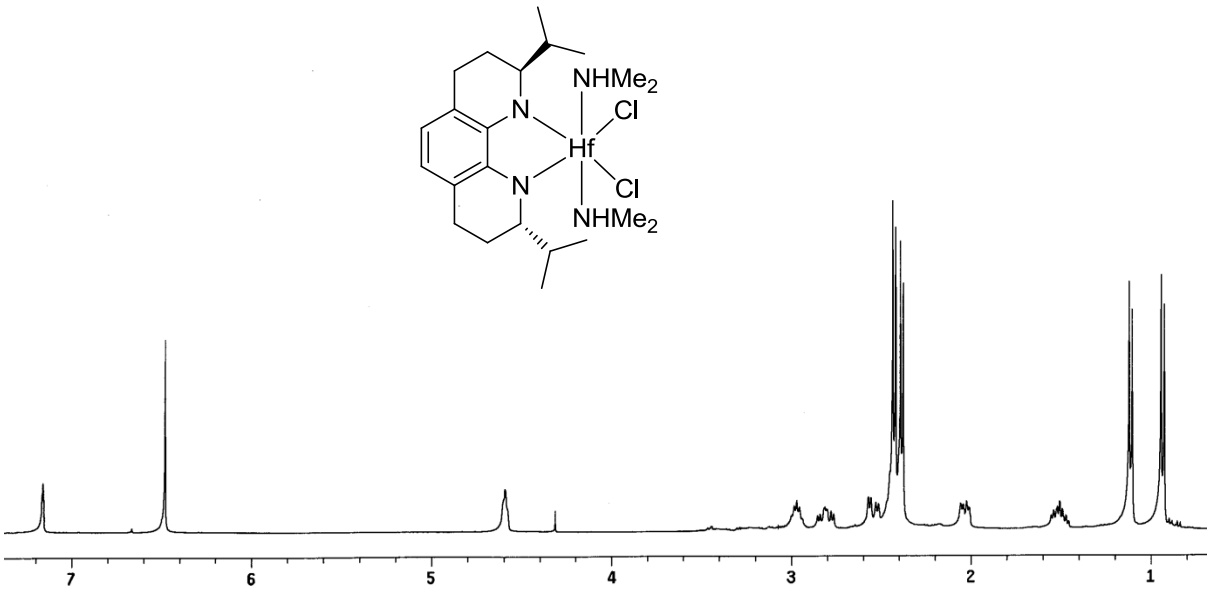


<[1]H NMR spectrum of **11** in C_6D_6>



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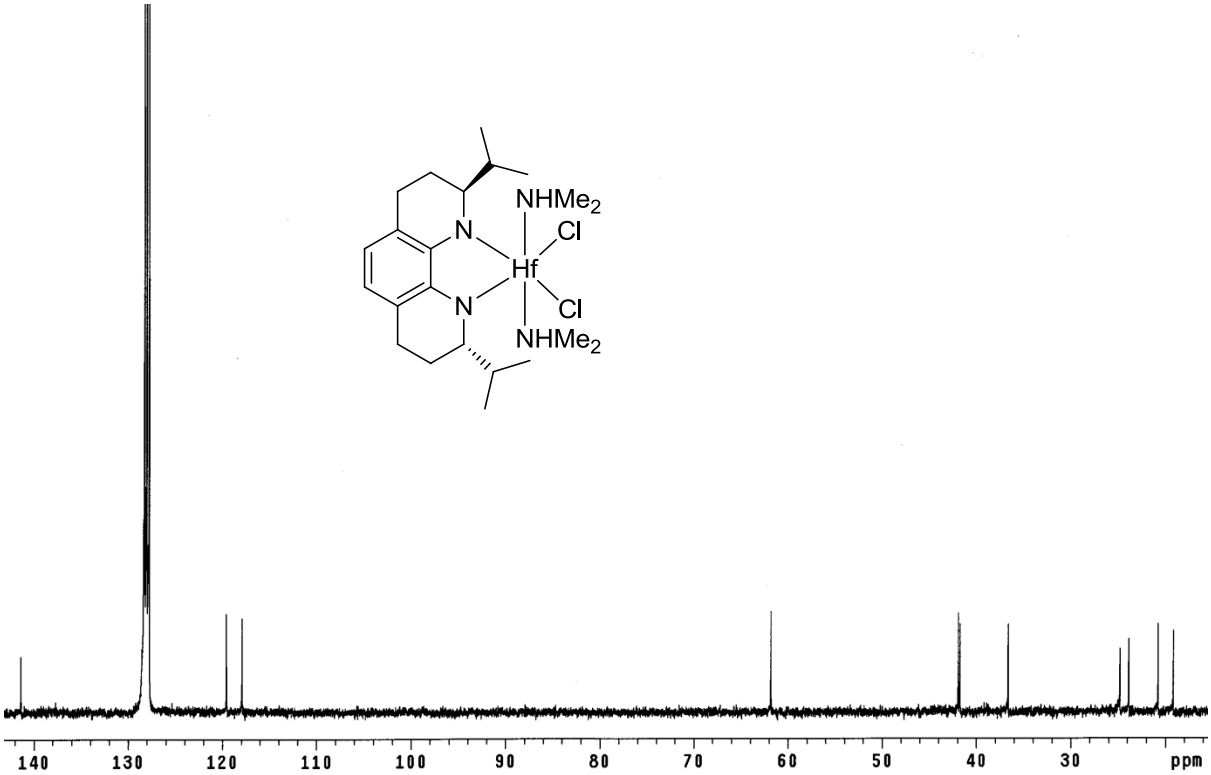
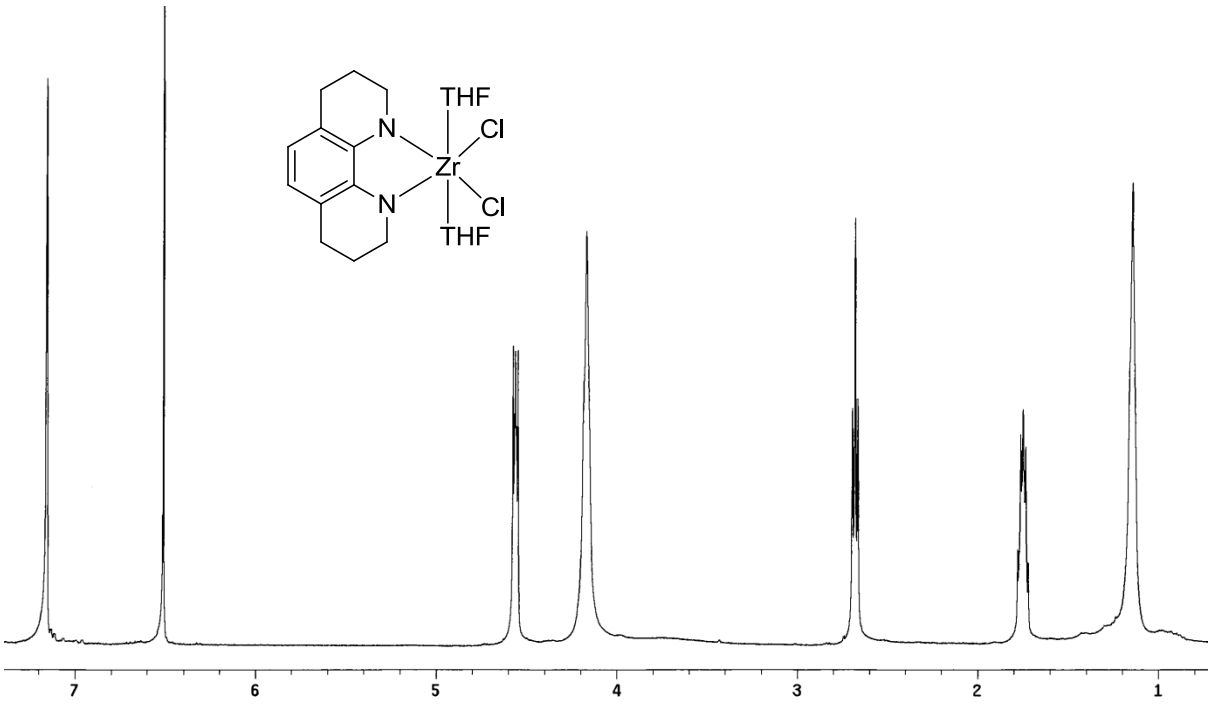


<[1]H NMR spectrum of **12** in C_6D_6>



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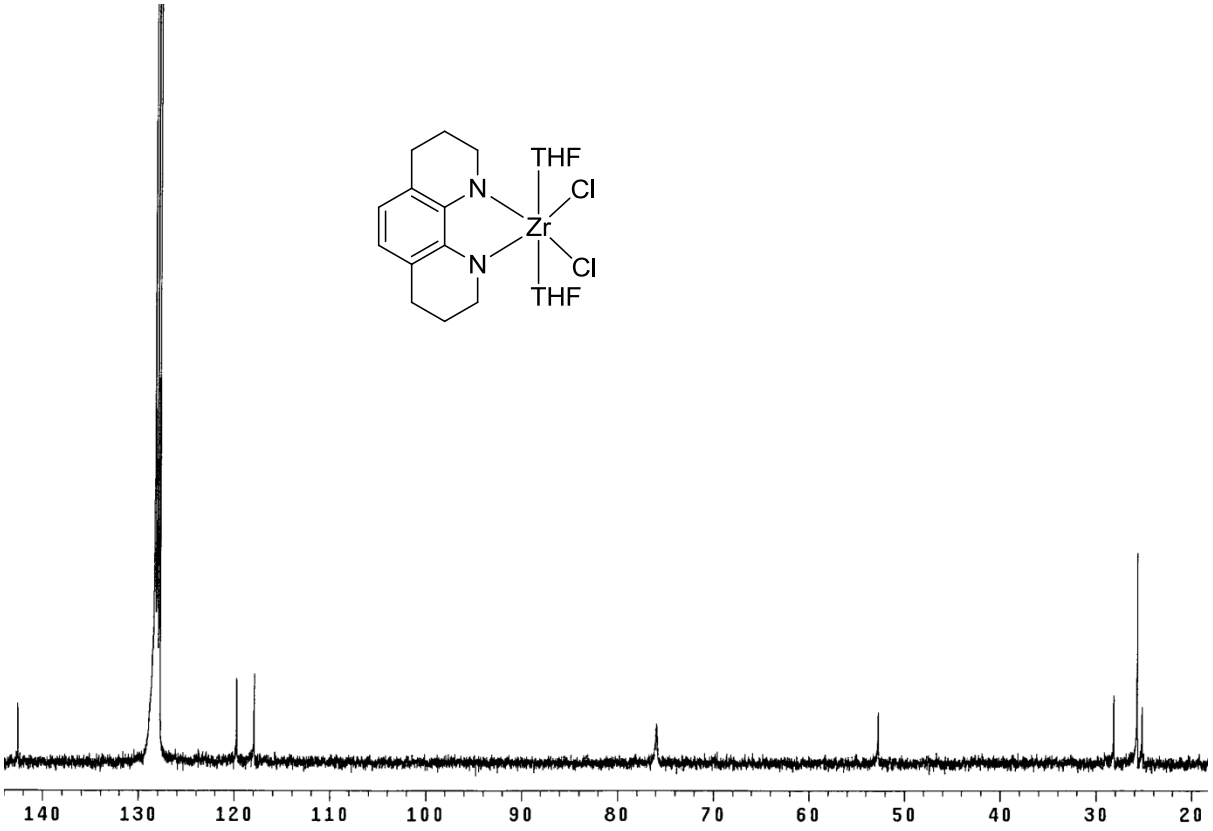

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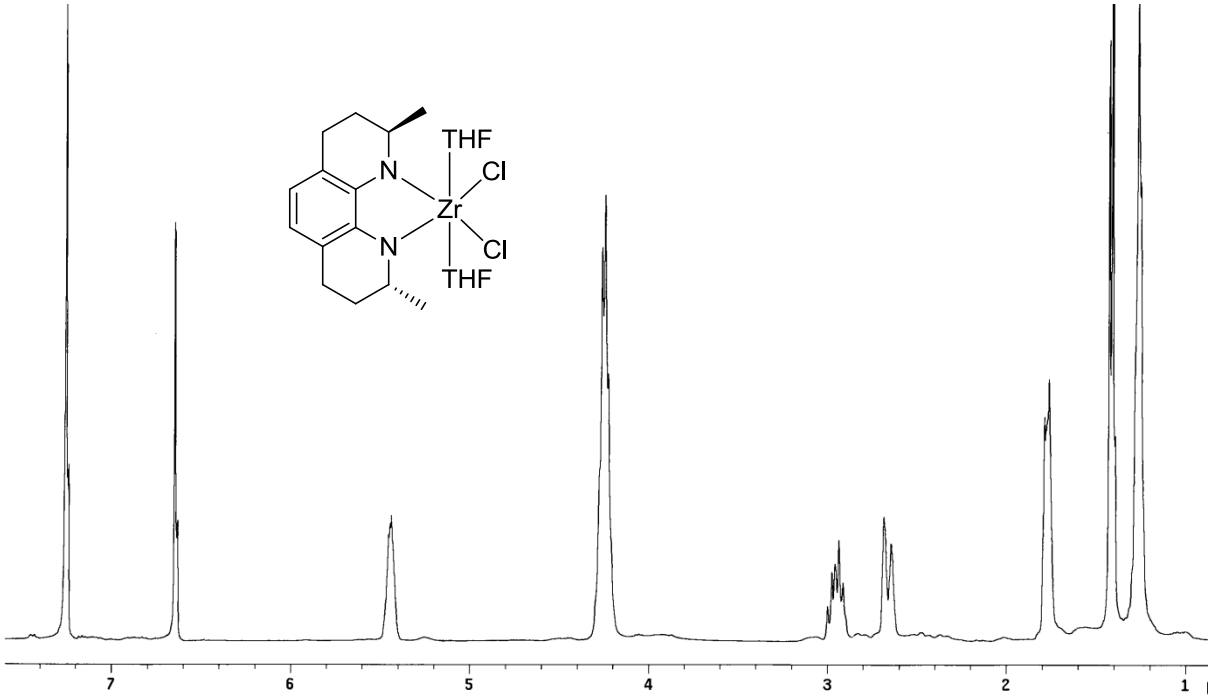

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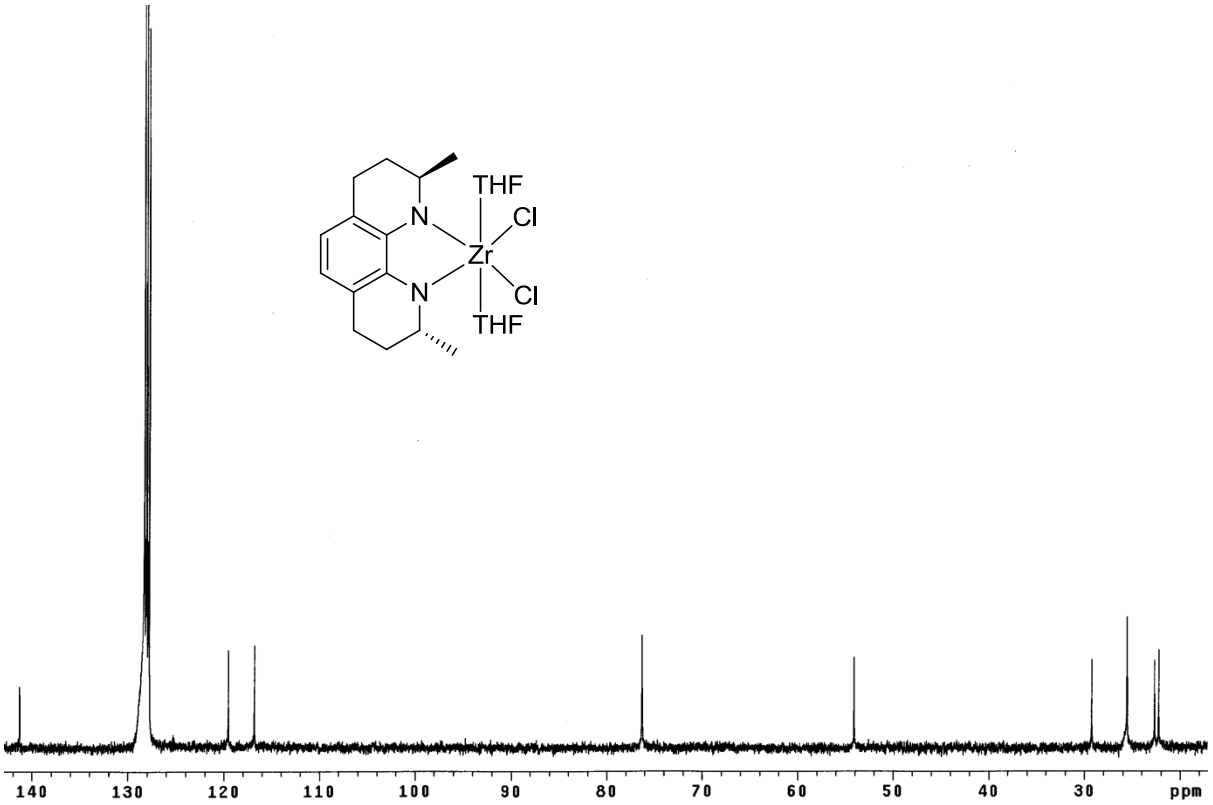
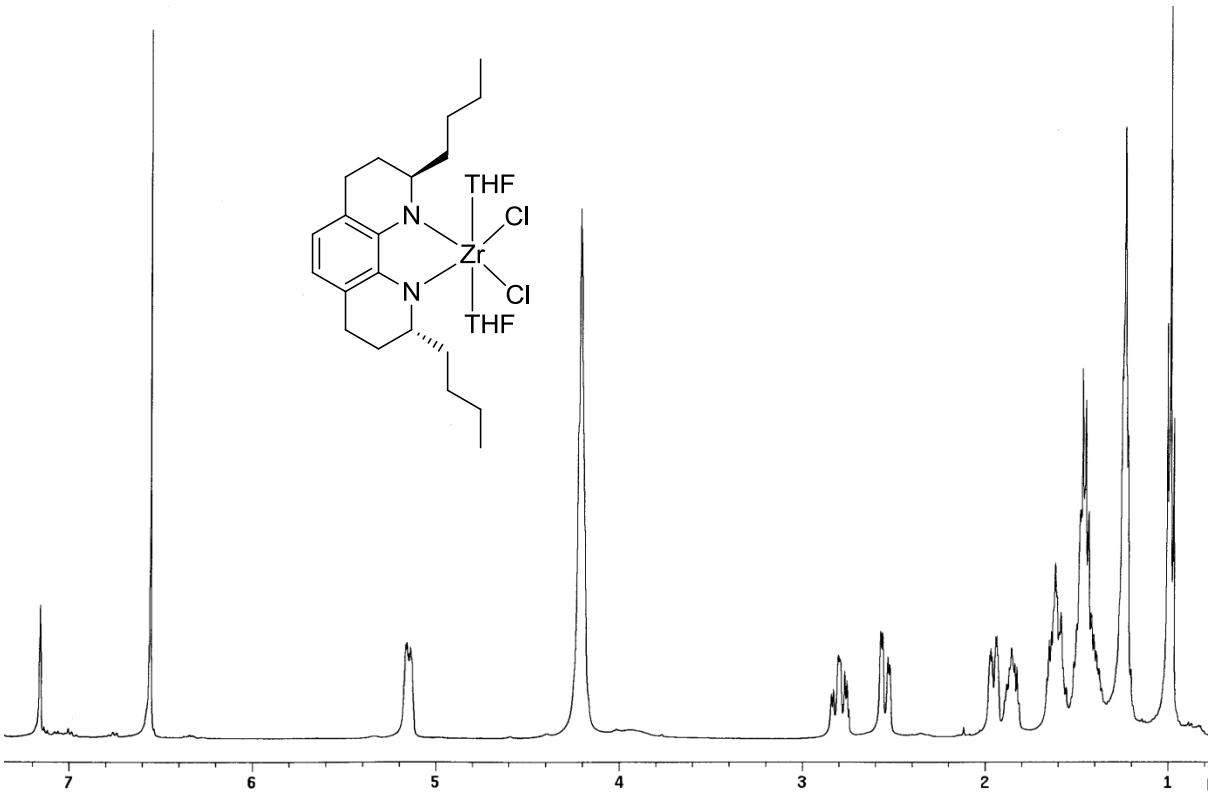


<[1]H NMR spectrum of **14** in C_6D_6>



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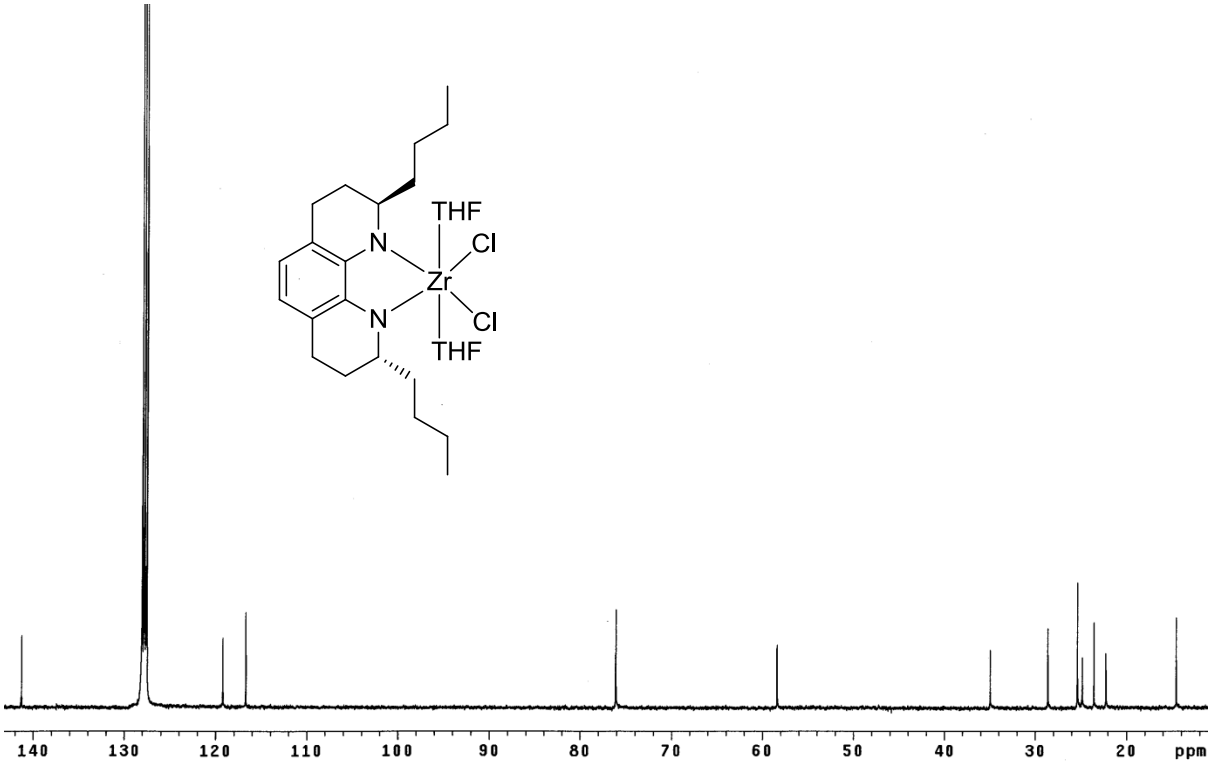
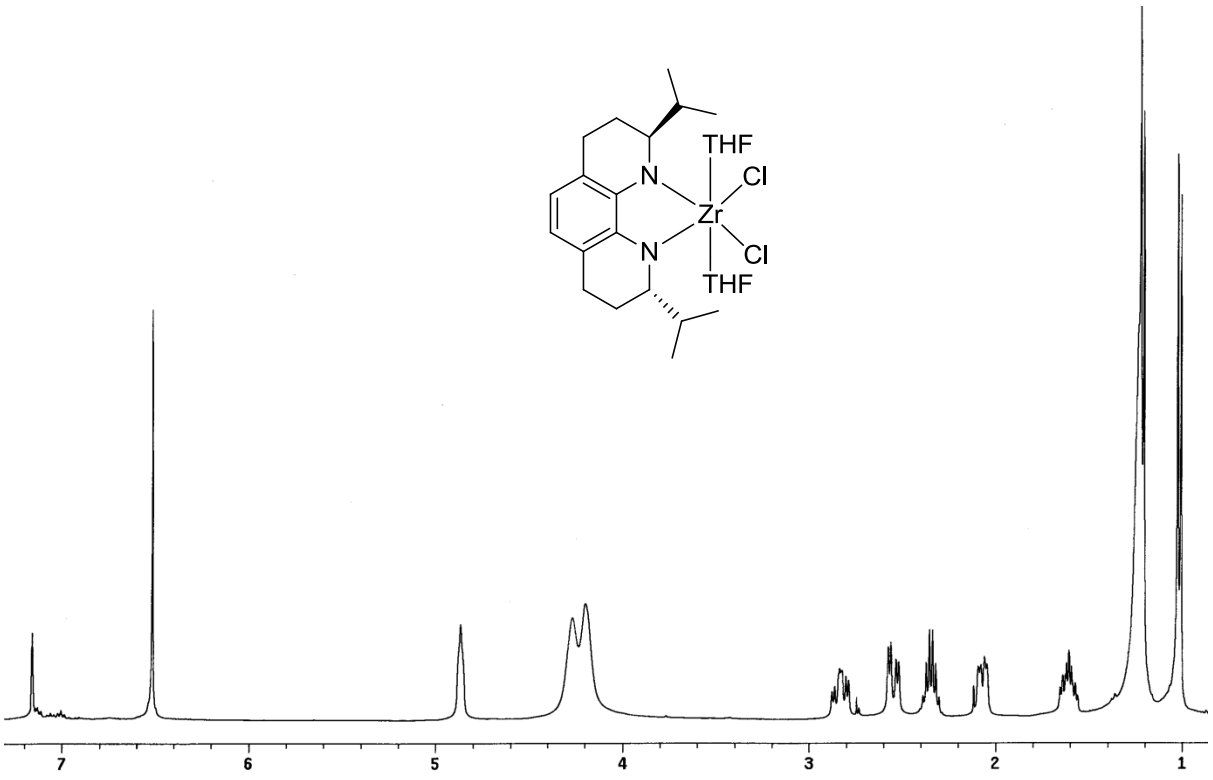


<[1]H NMR spectrum of **15** in C_6D_6>



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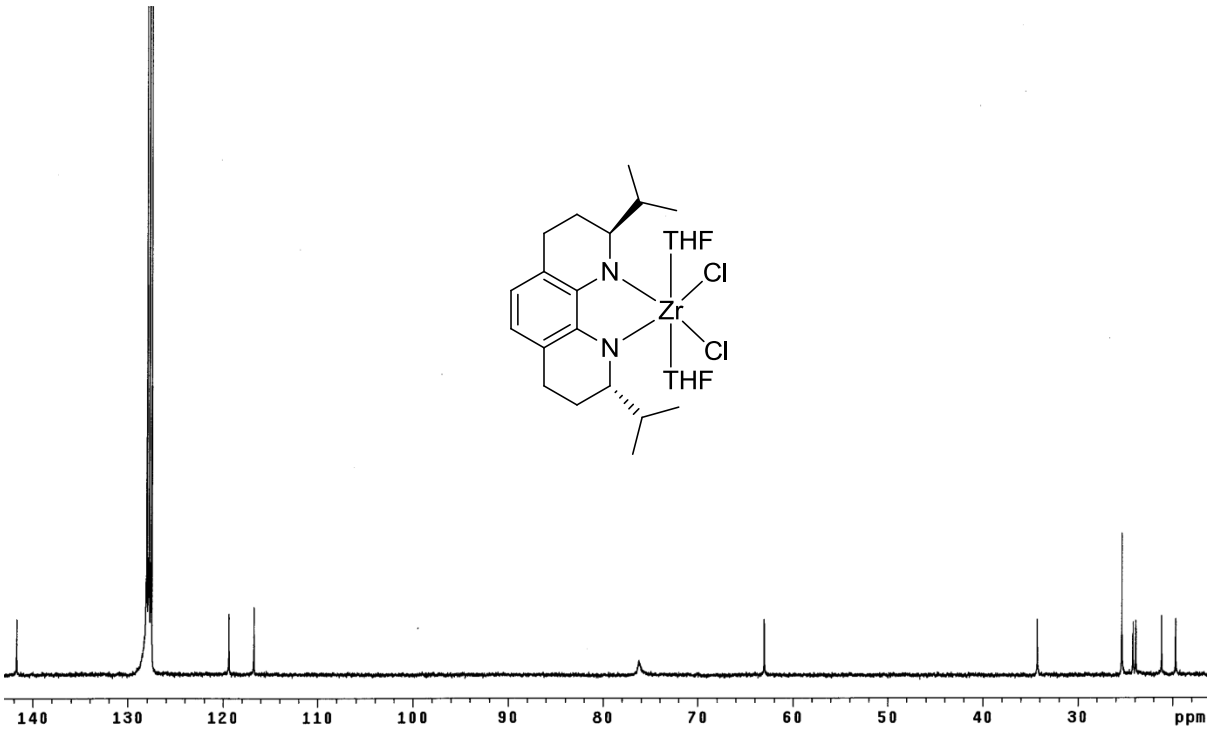
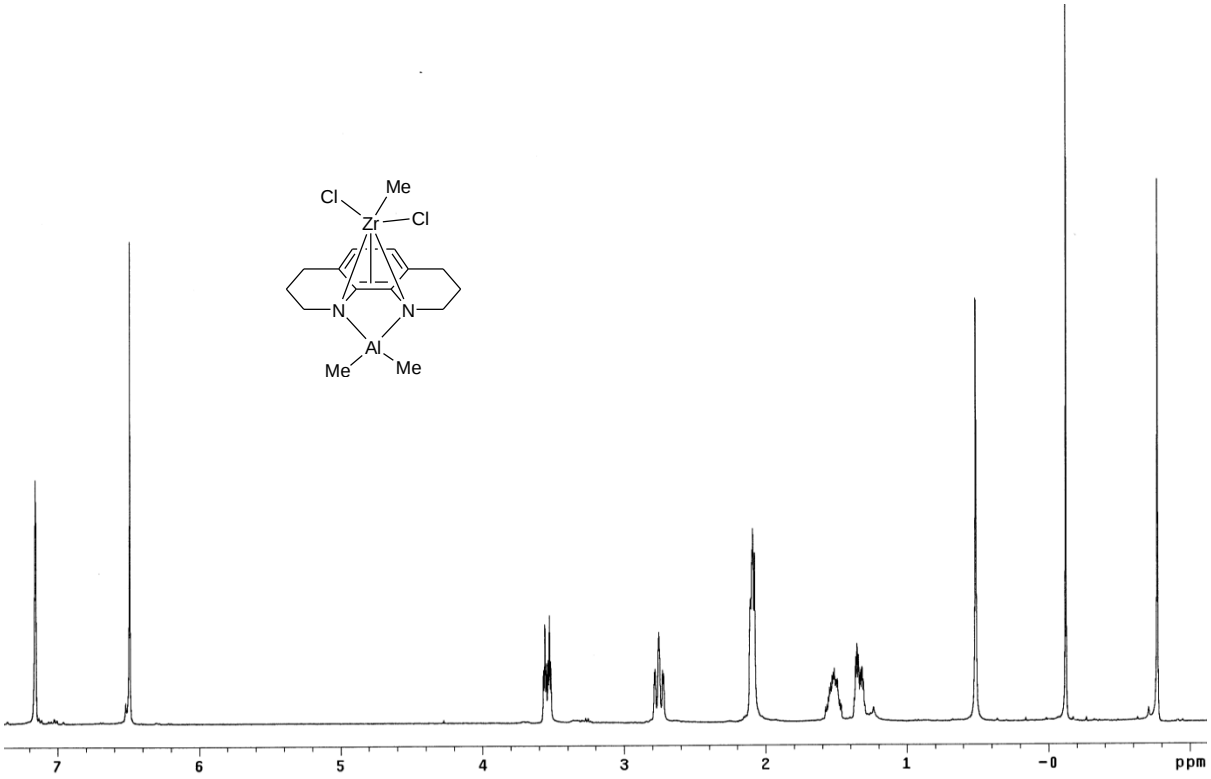
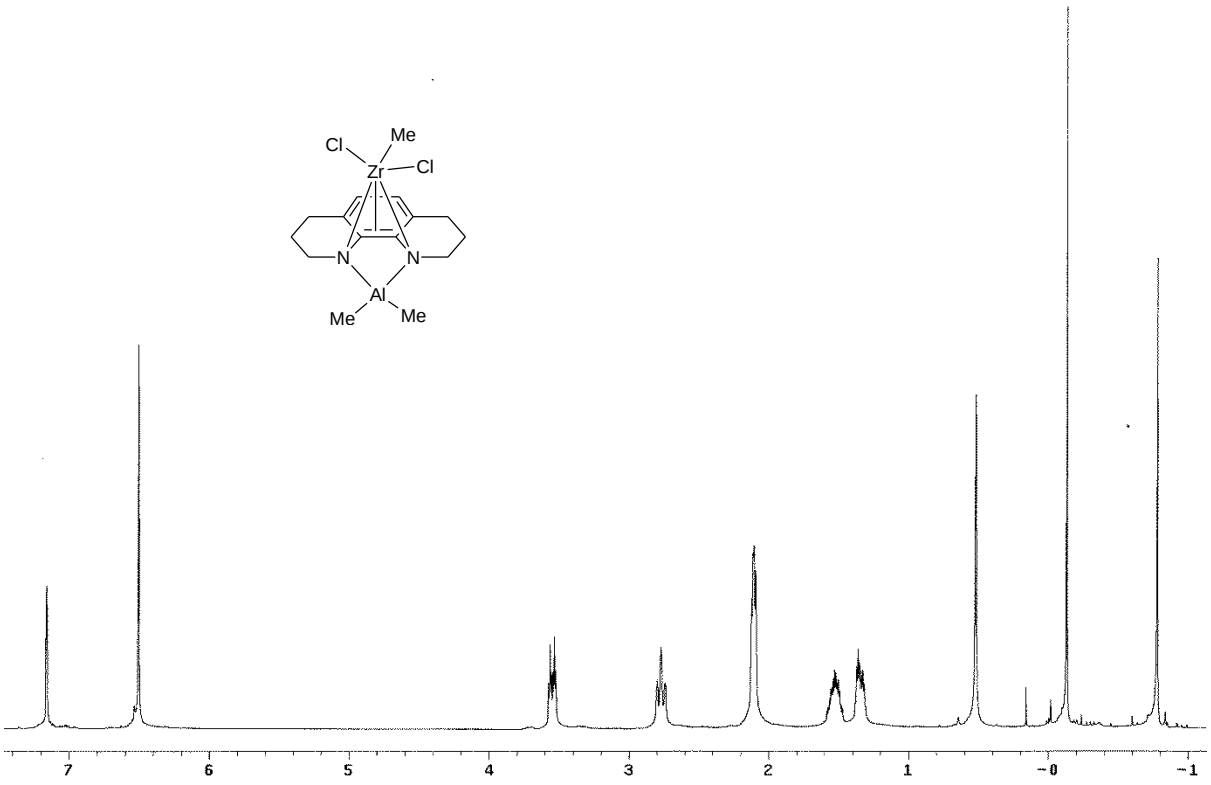


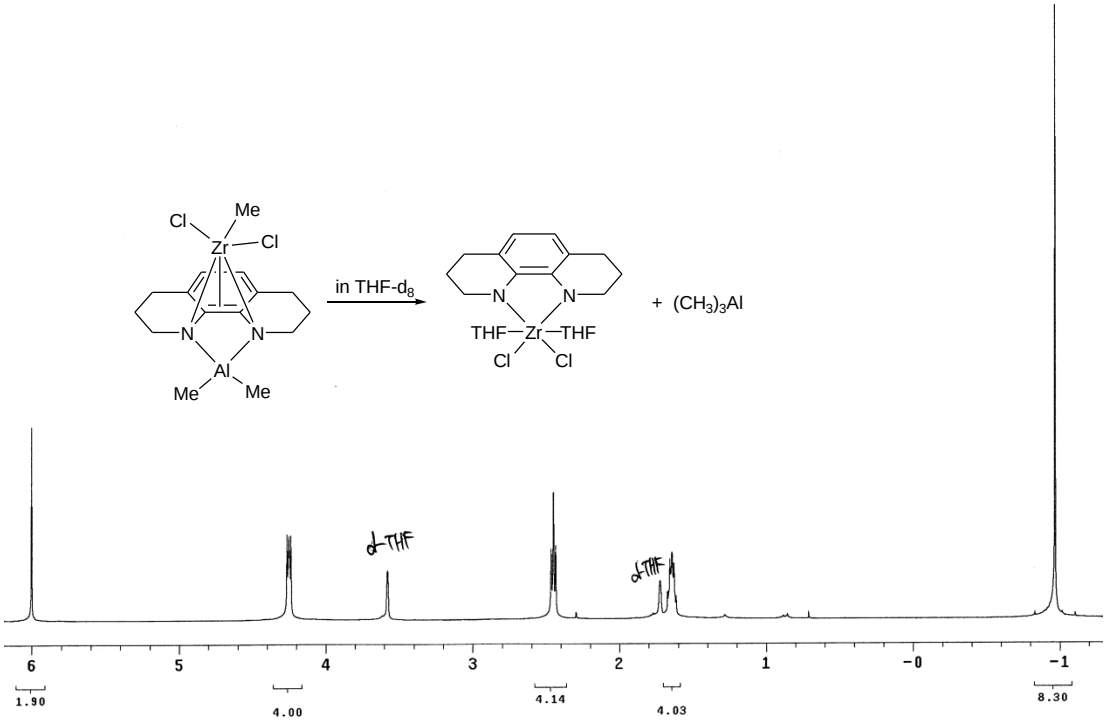
<[1]H NMR spectrum of **16** in C_6D_6>



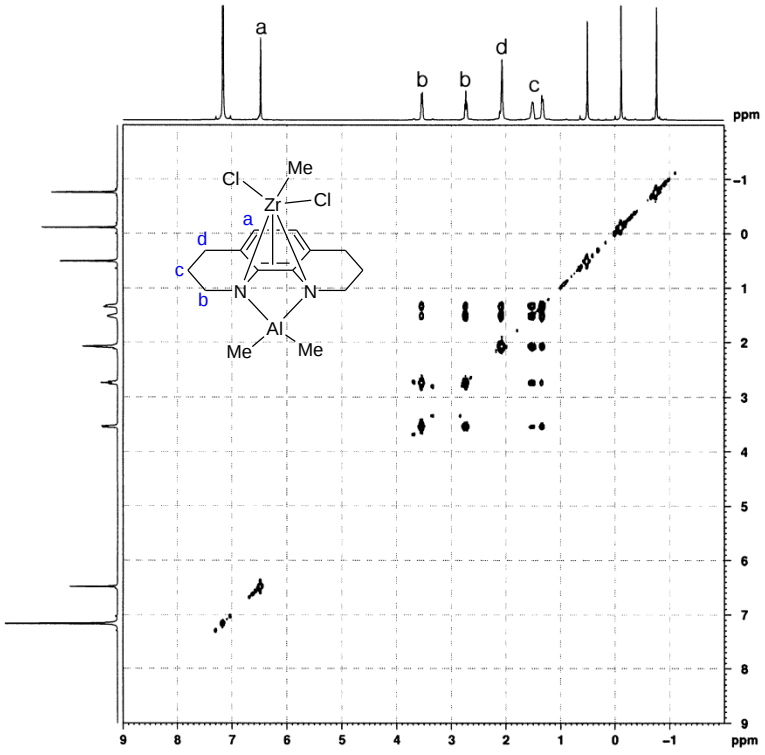
<[1]H NMR spectrum of **16** in C_6D_6 after heating at 80 °C for 3 hours>



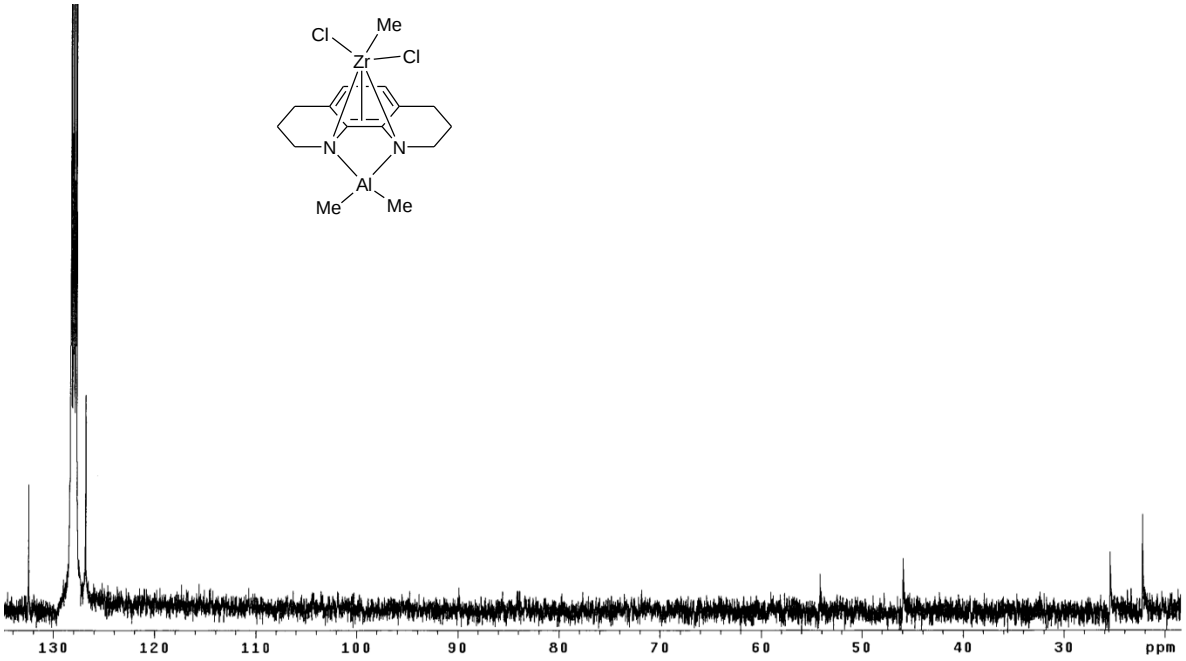
<[1]H NMR spectrum of **16** in THF-d_8: The spectrum showed that **16** reconverted to **12** in THF.>



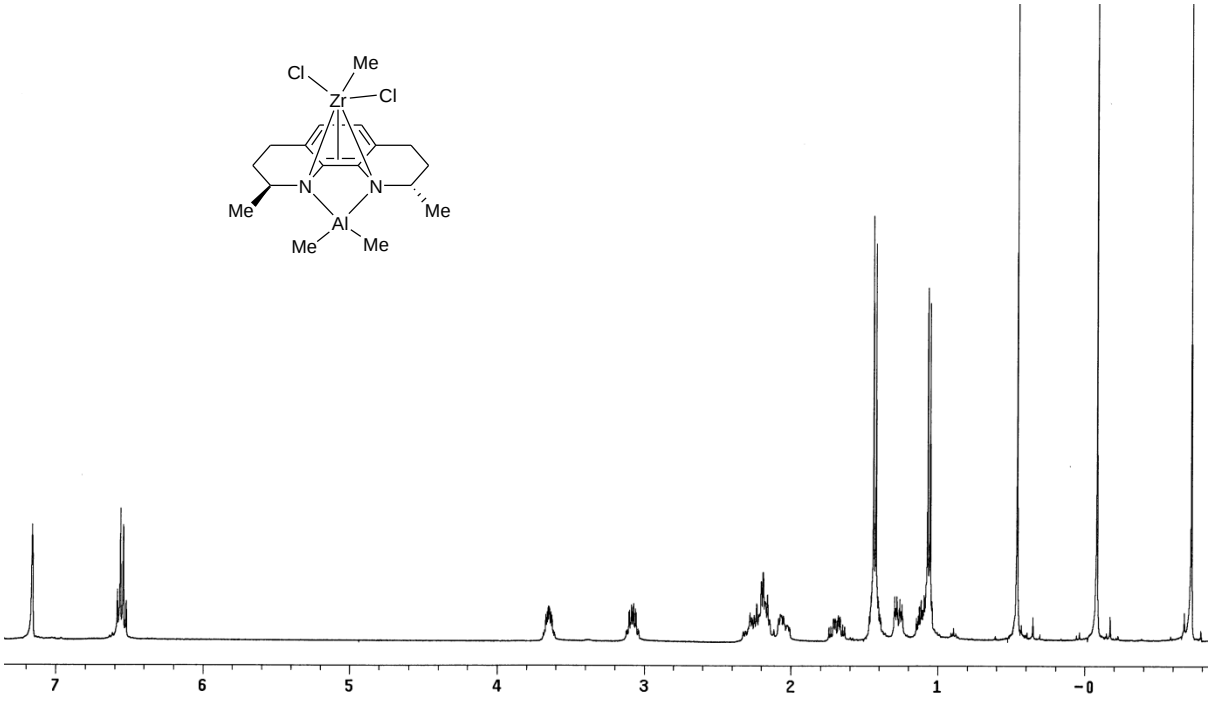
<[1]H-[1]H COSY NMR spectrum of **16** and signal assignment>



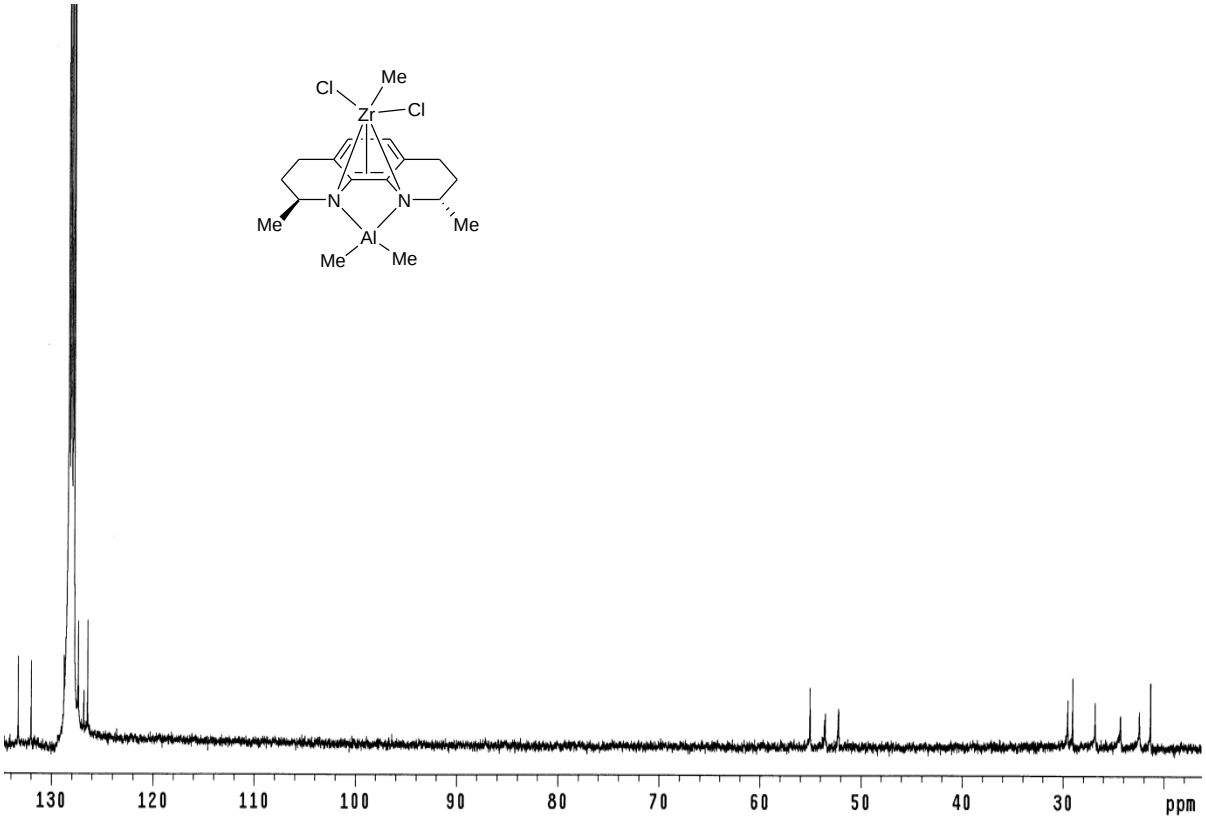
<[13]C NMR spectrum of **16** in C_6D_6>



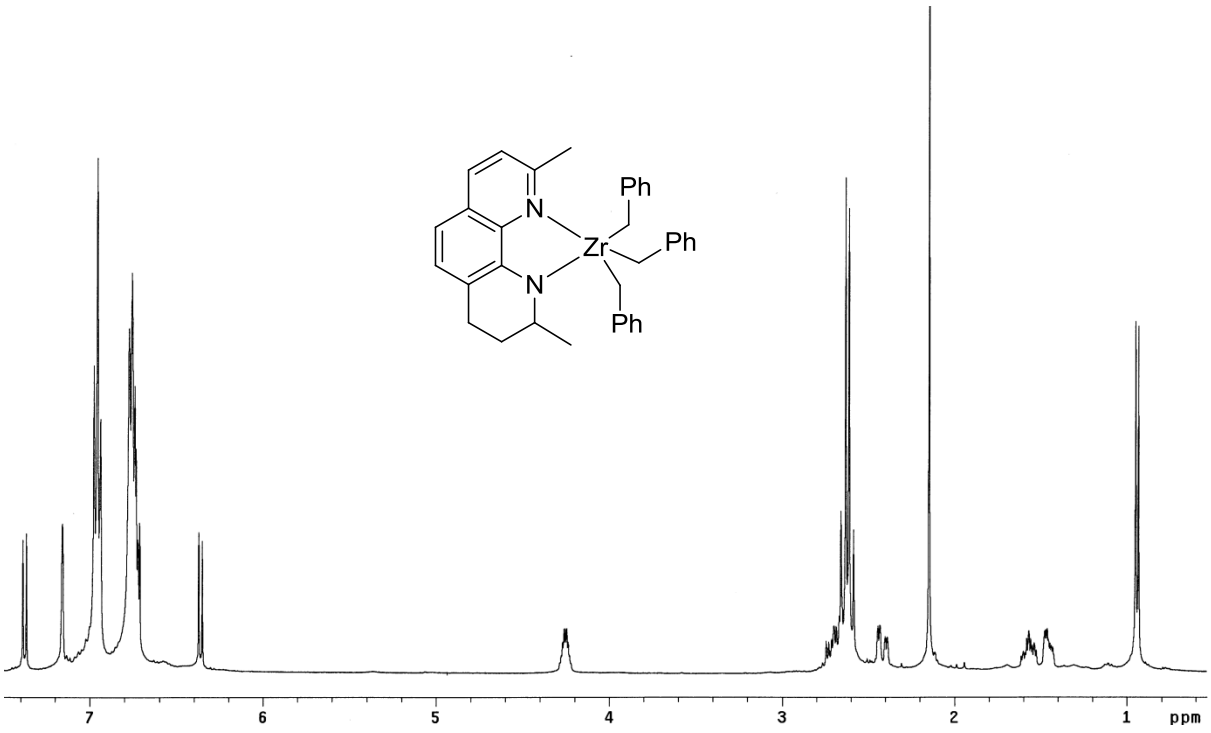
<[1]H NMR spectrum of **17** in C_6D_6>



<[13]C NMR Spectrum of **17** in C_6D_6>



<[1]H NMR spectrum of **18** in C_6D_6>



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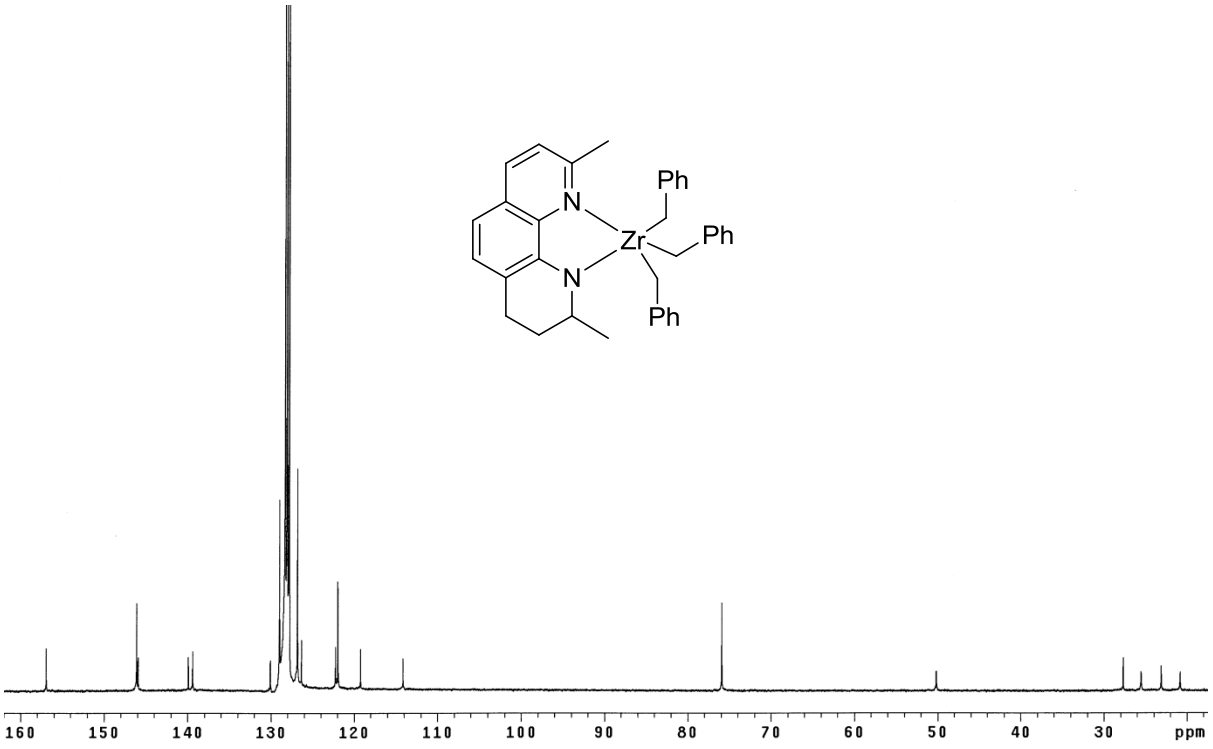
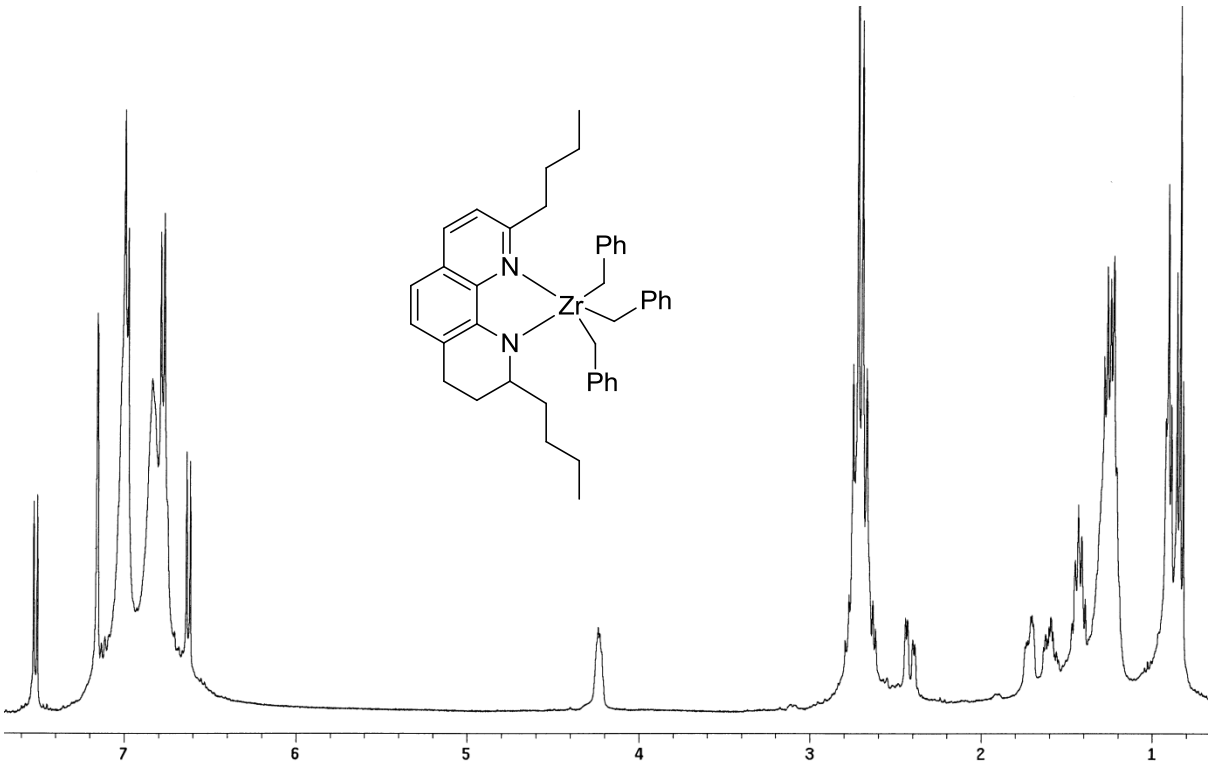
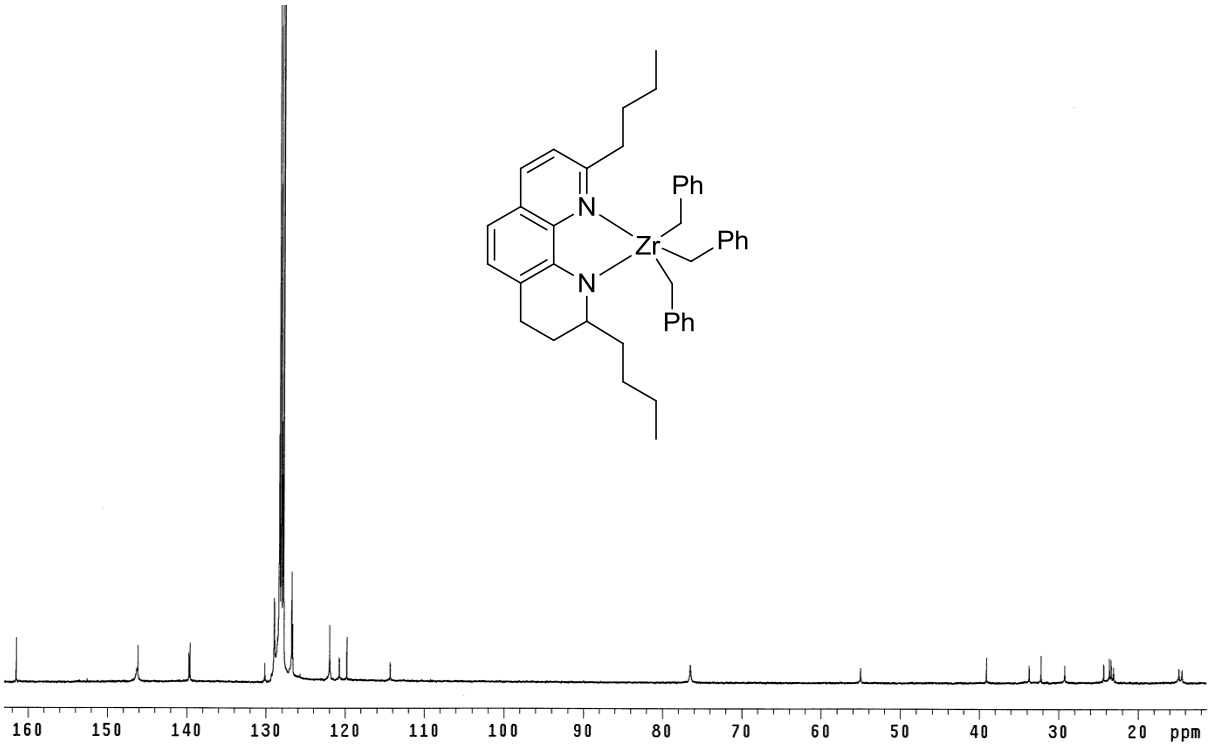


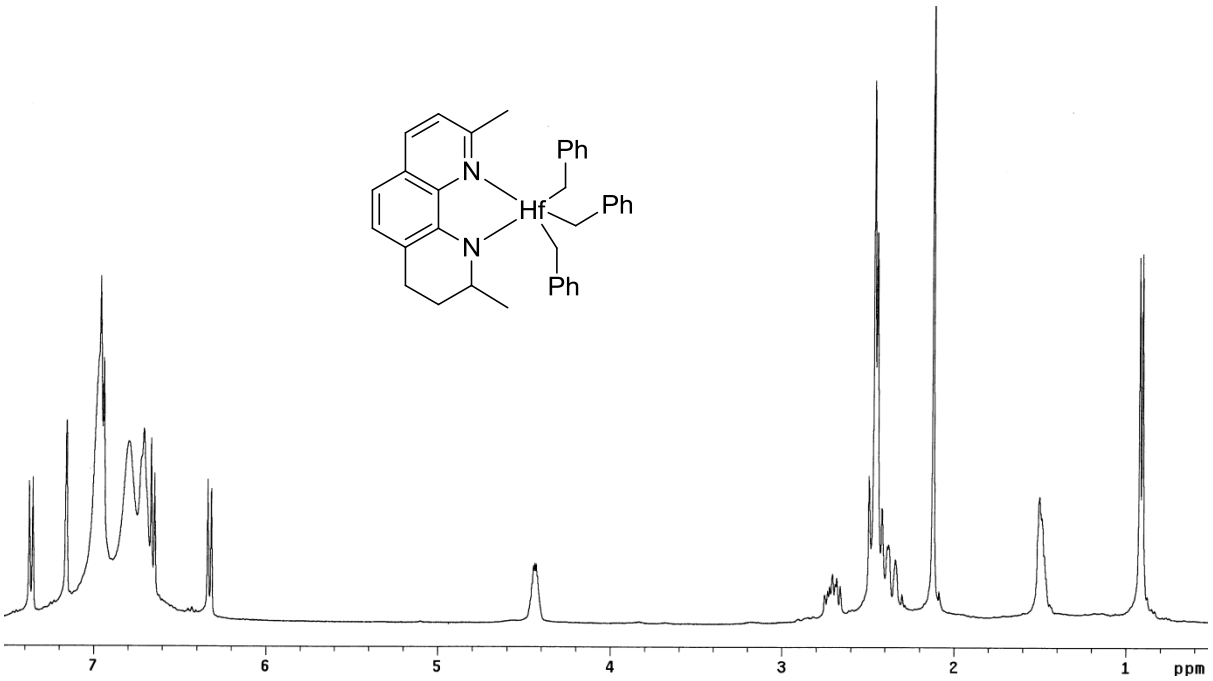
<[1]H NMR spectrum of **19** in C_6D_6>



<[13]C NMR Spectrum of **19** in C_6D_6>



<[1]H NMR spectrum of **20** in C_6D_6>



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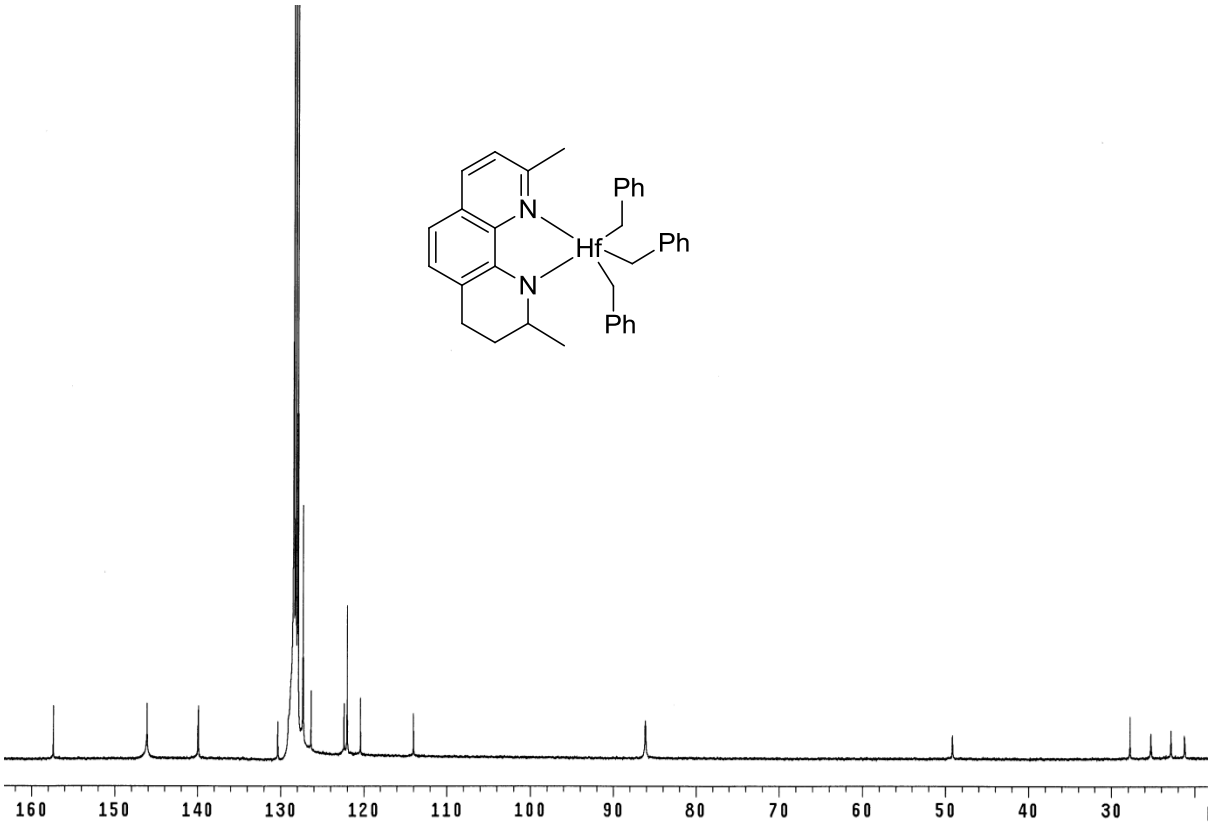
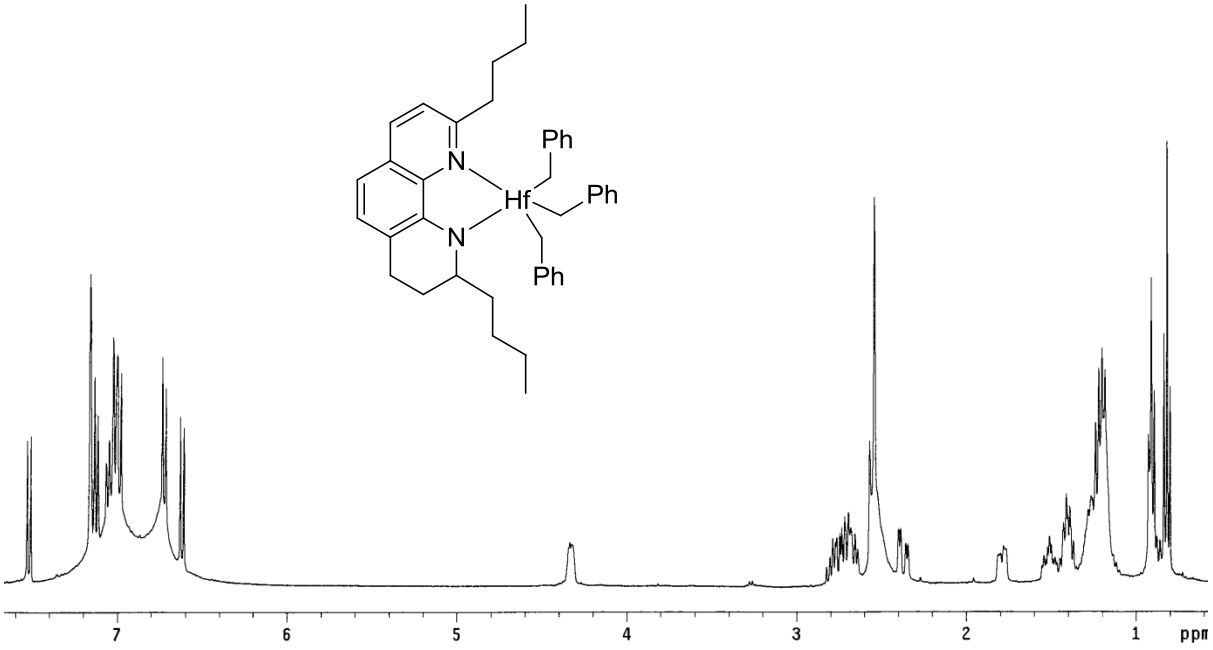


<[1]H NMR spectrum of **21** in C_6D_6>



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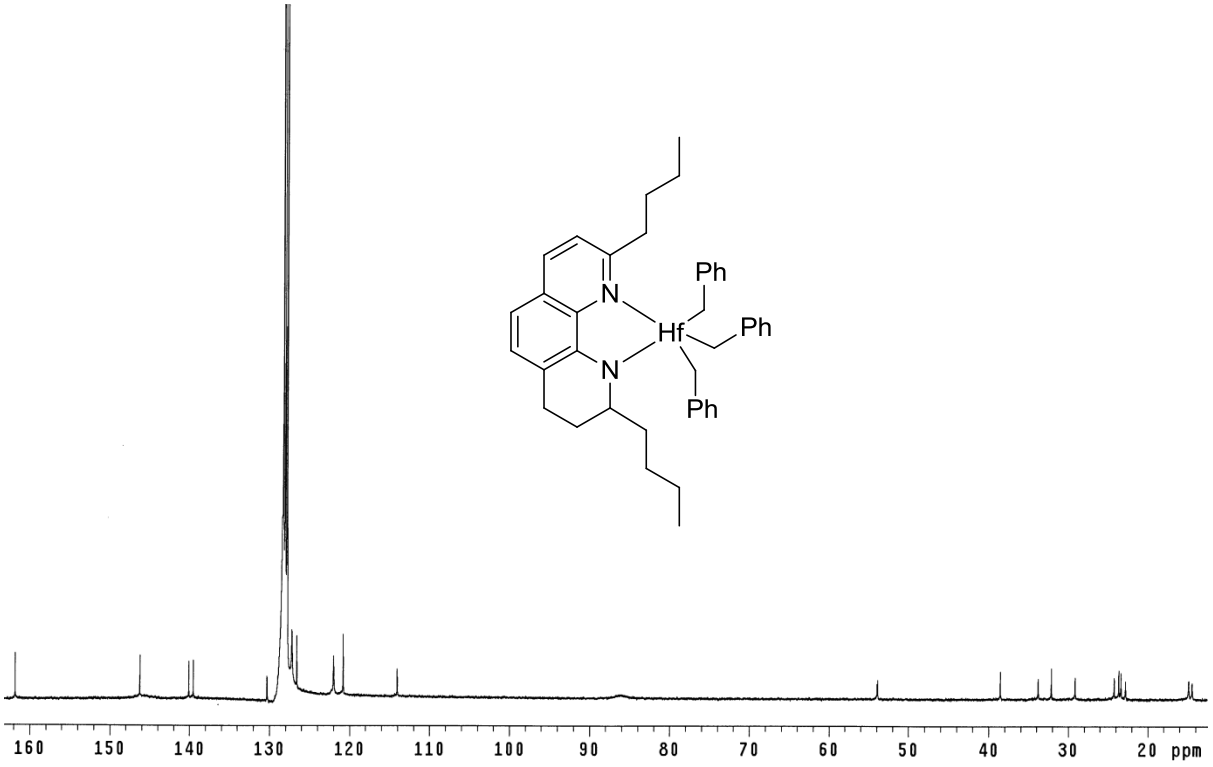
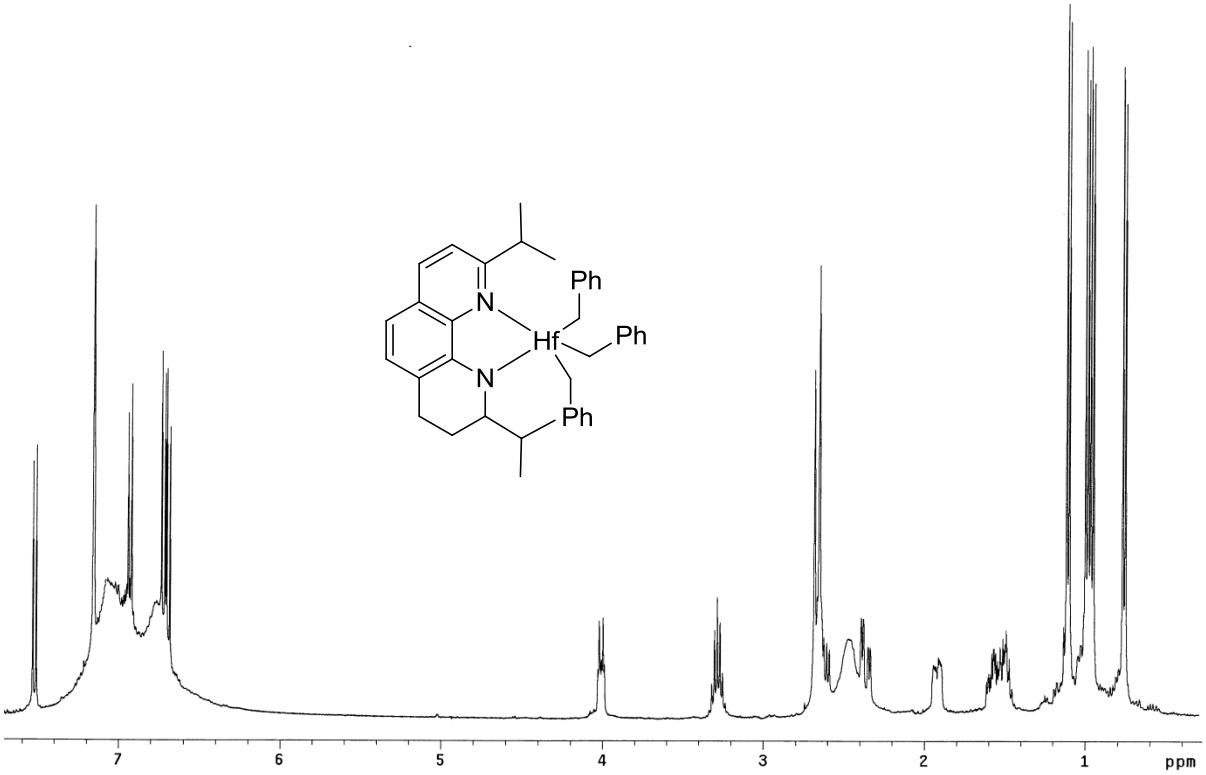
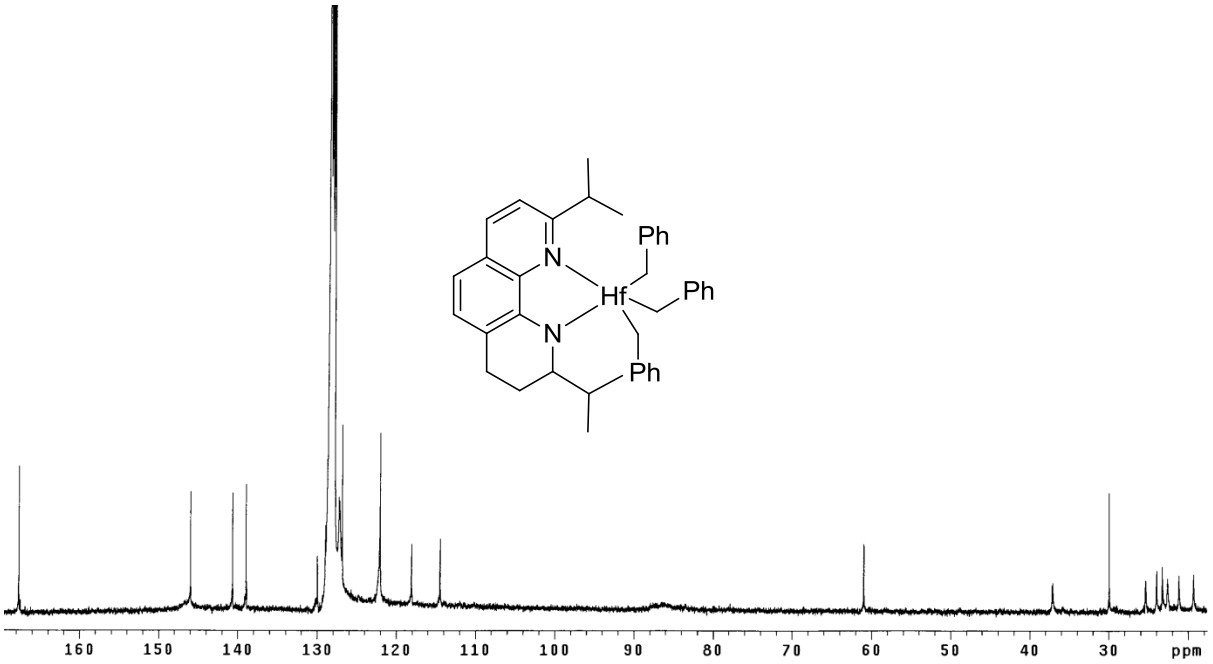


<[1]H NMR spectrum of **22** in C_6D_6>

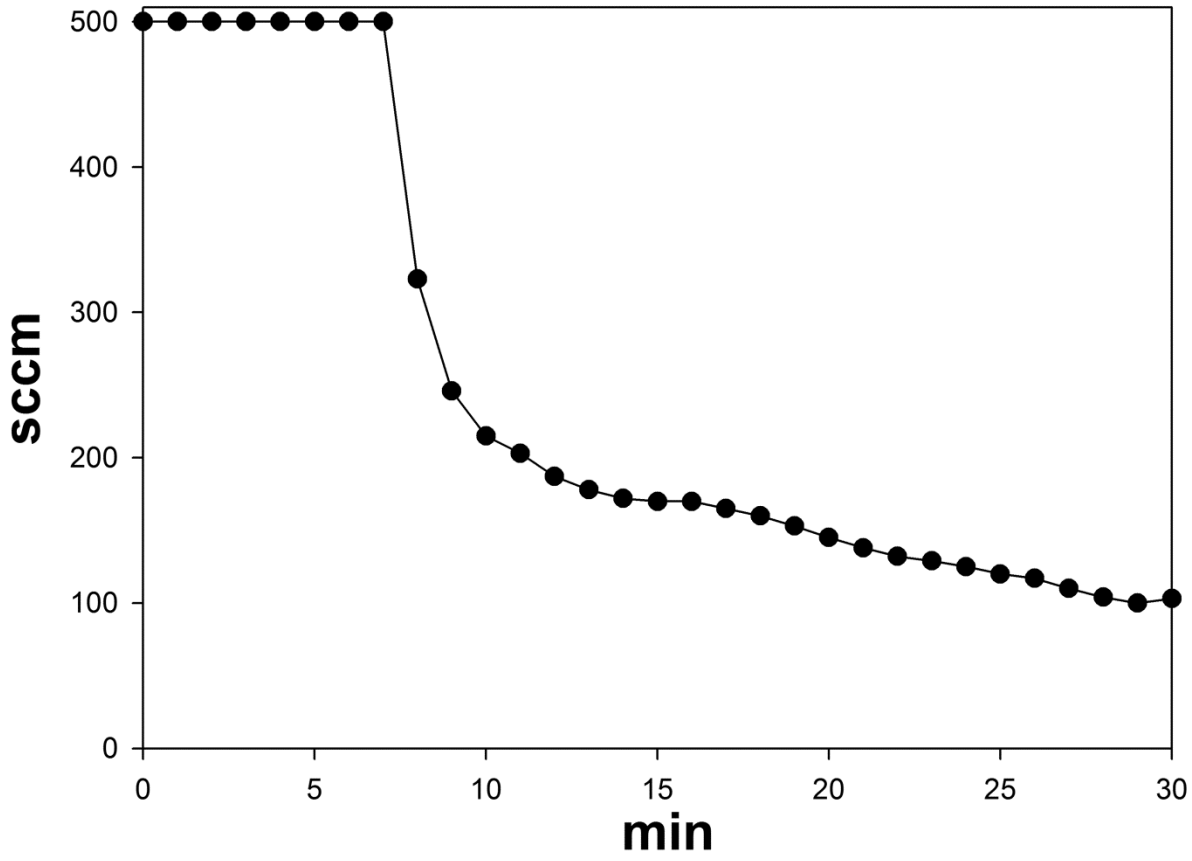


<[13]C NMR spectrum of **22** in C_6D_6>

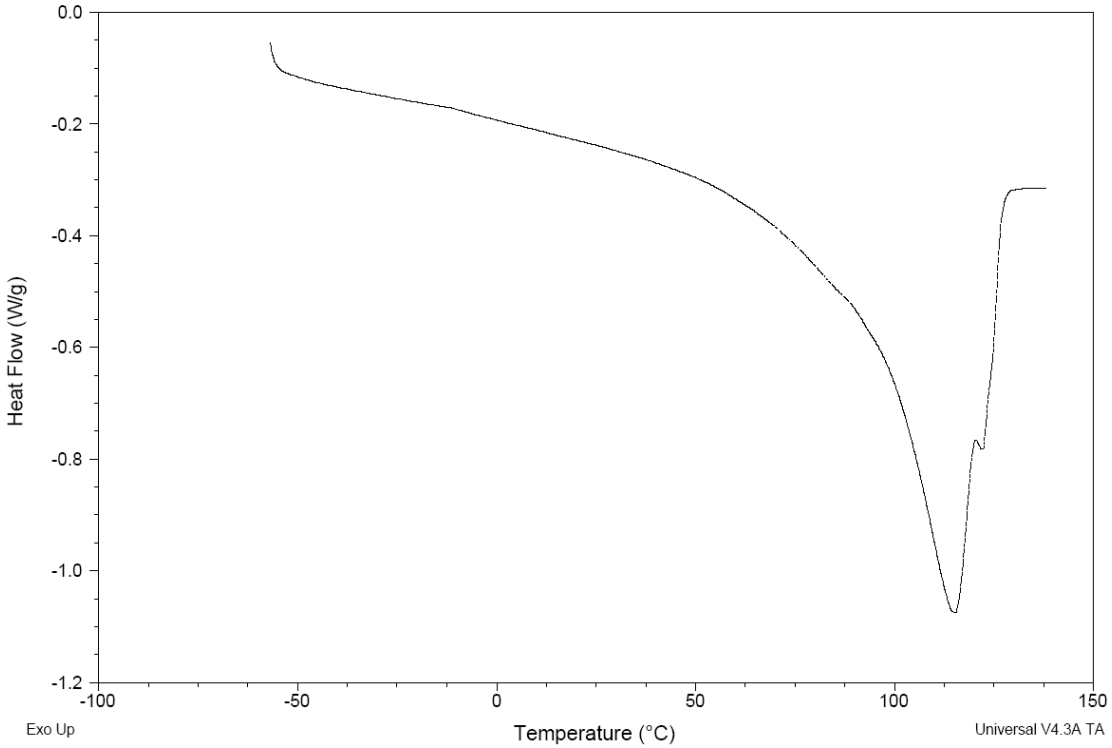


<Ethylene consumption rate versus time>

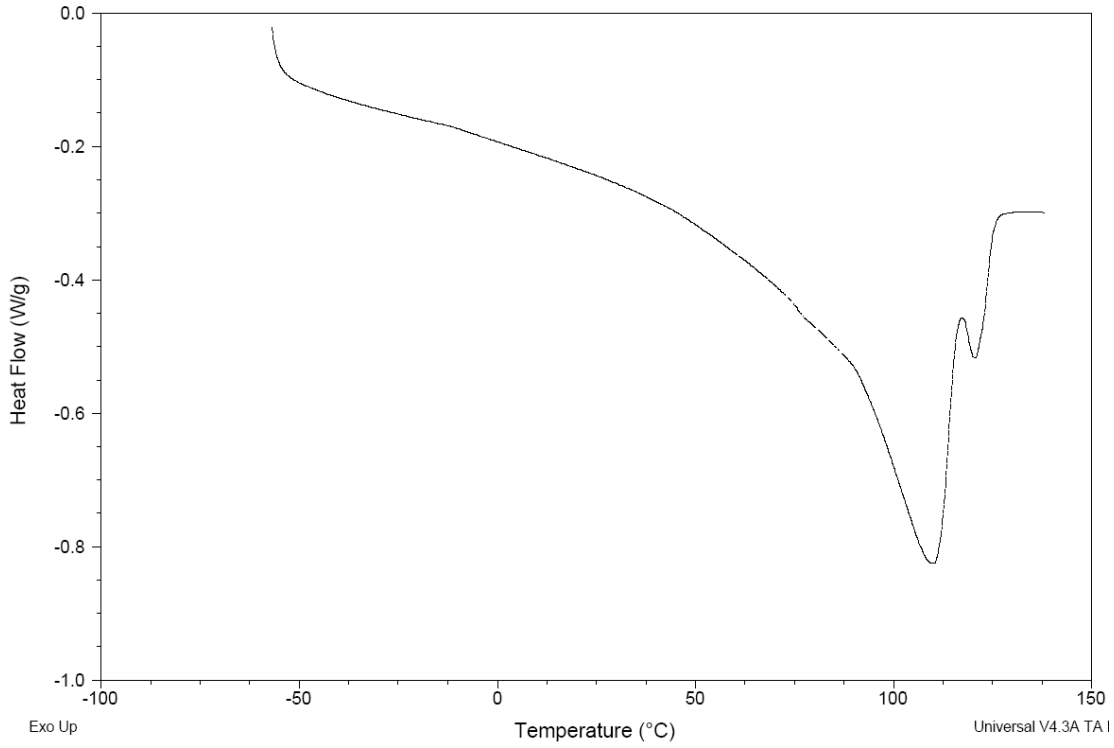
Polymerization conditions: **16** (1.5 μmol), MMAO (4.5 mmol), methylcyclohexane (40 mL), in the absence of 1-octene, 100 ℃, ethylene (28–30 bar)



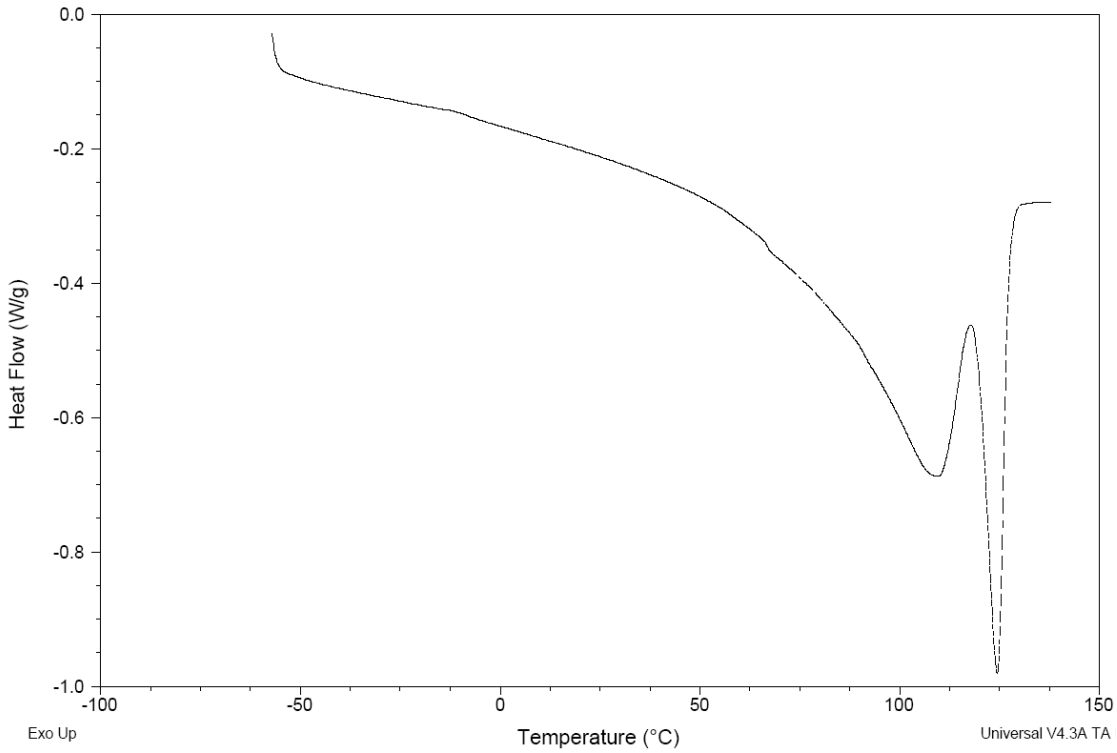
< DSC curve for the polymer generated with **4**>



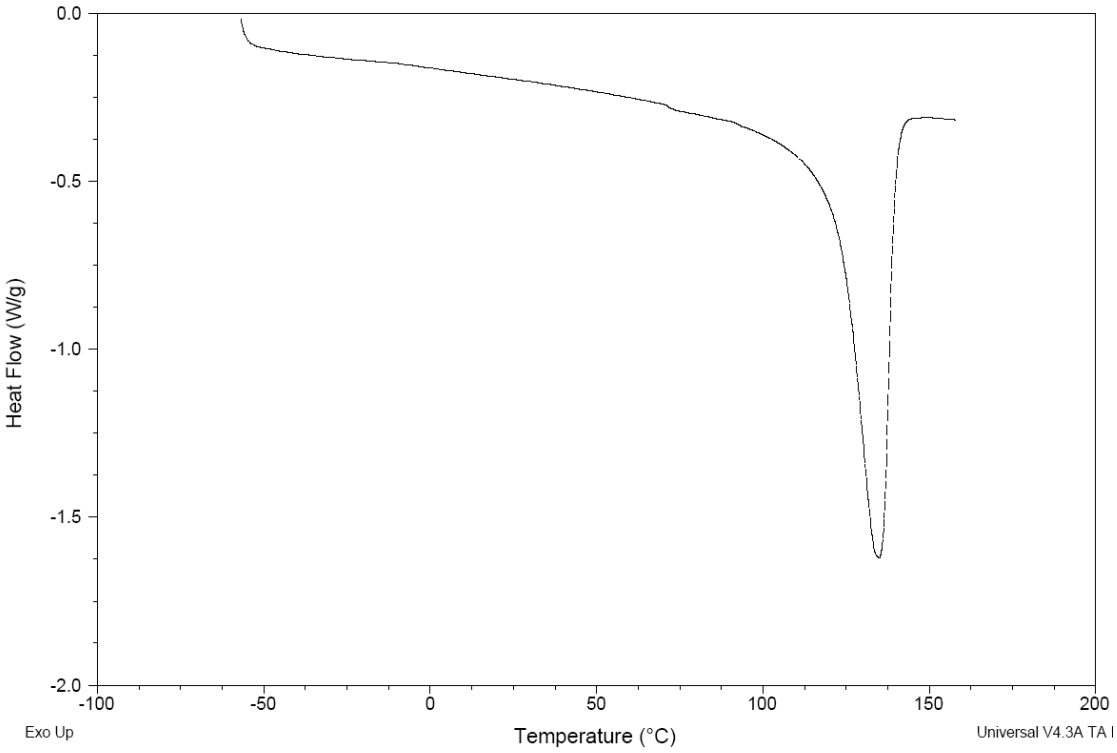
< DSC curve for the polymer generated with **5**>



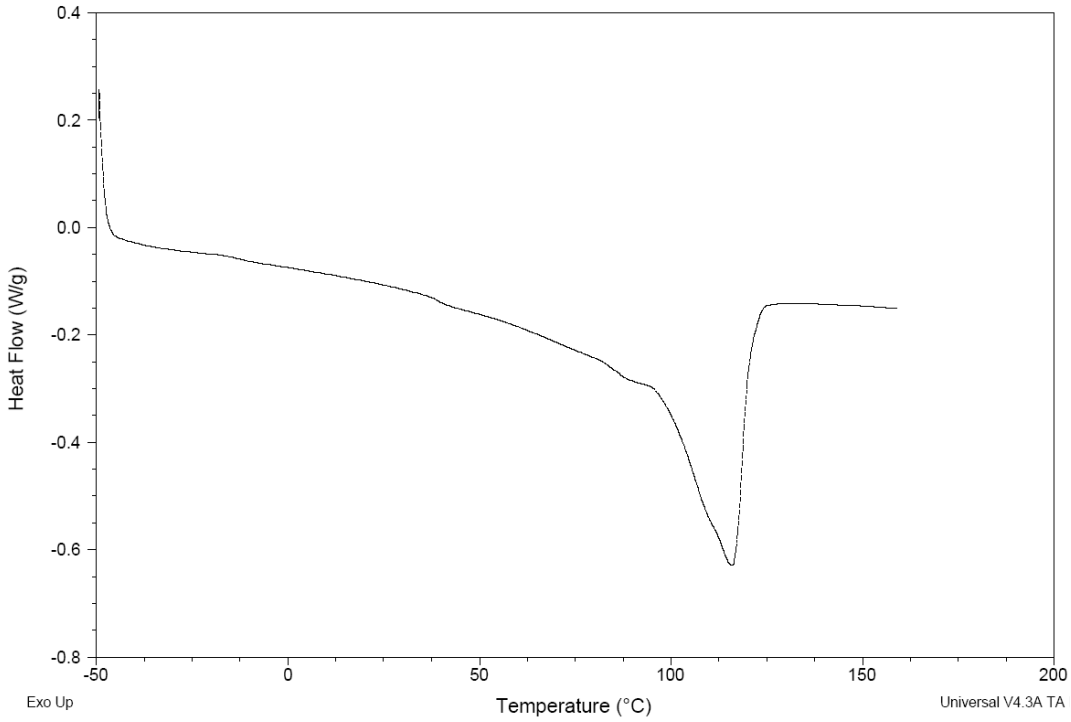
< DSC curve for the polymer generated with **6**>



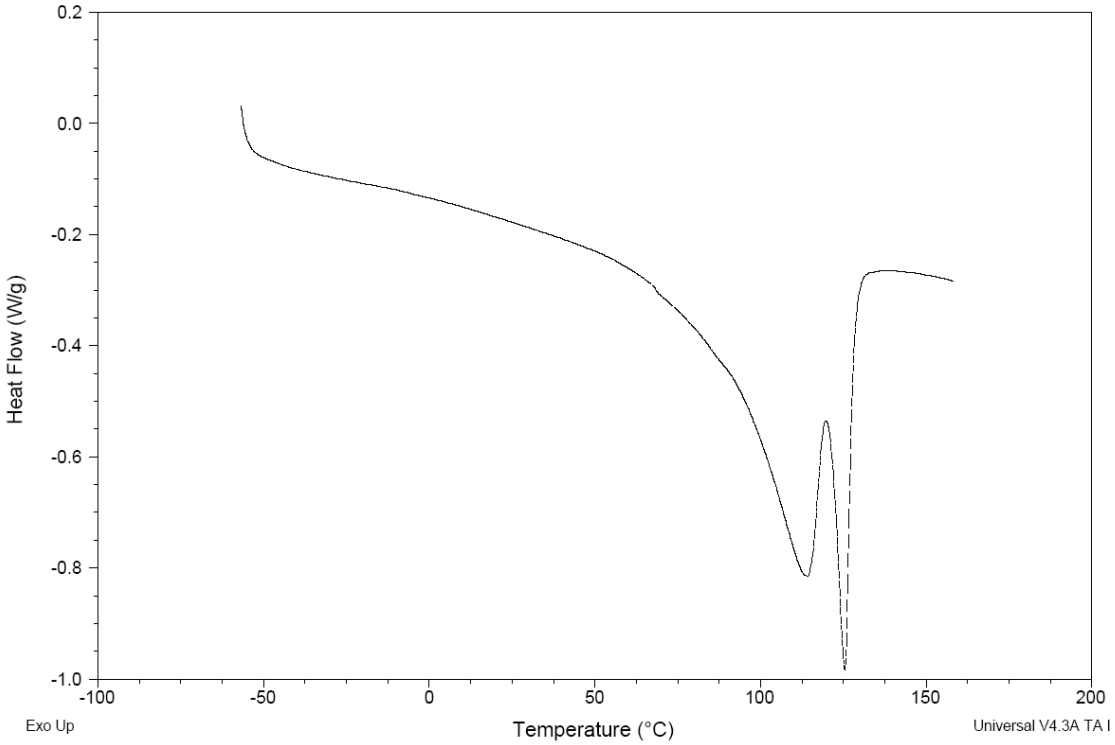
< DSC curve the polymer generated with **7**>



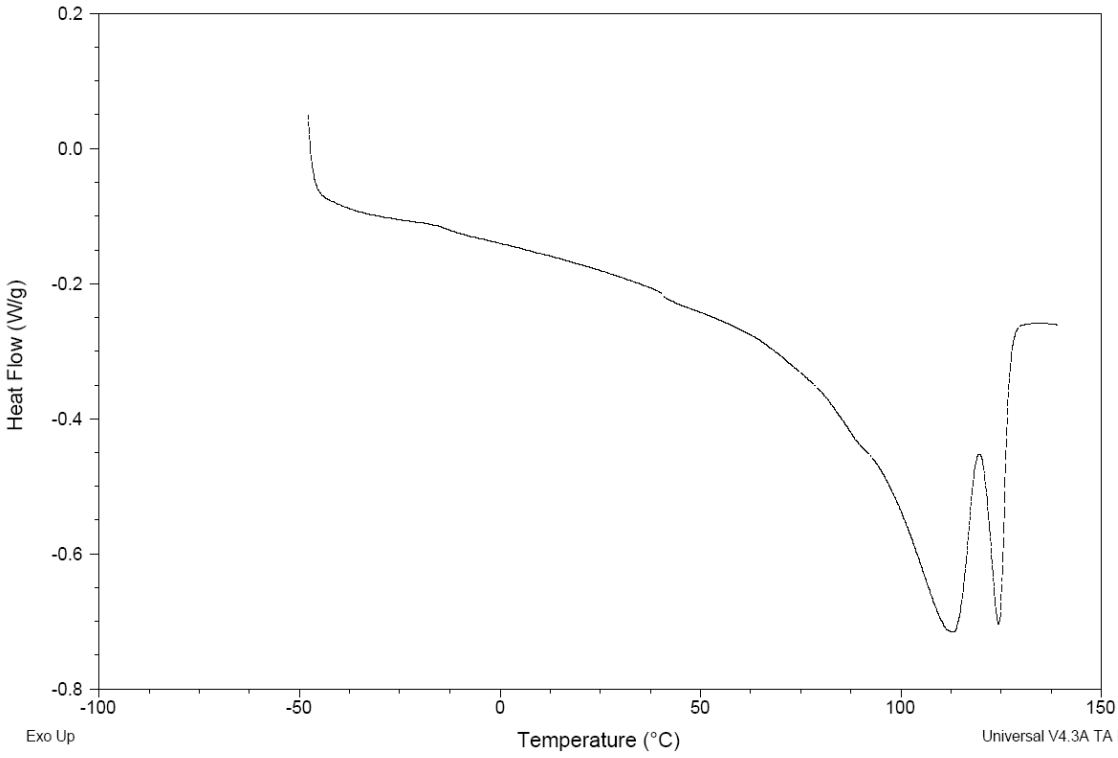
< DSC curve for the polymer generated with **12**>



< DSC curve for the polymer generated with **13**>



< DSC curve for the polymer generated with **14**>



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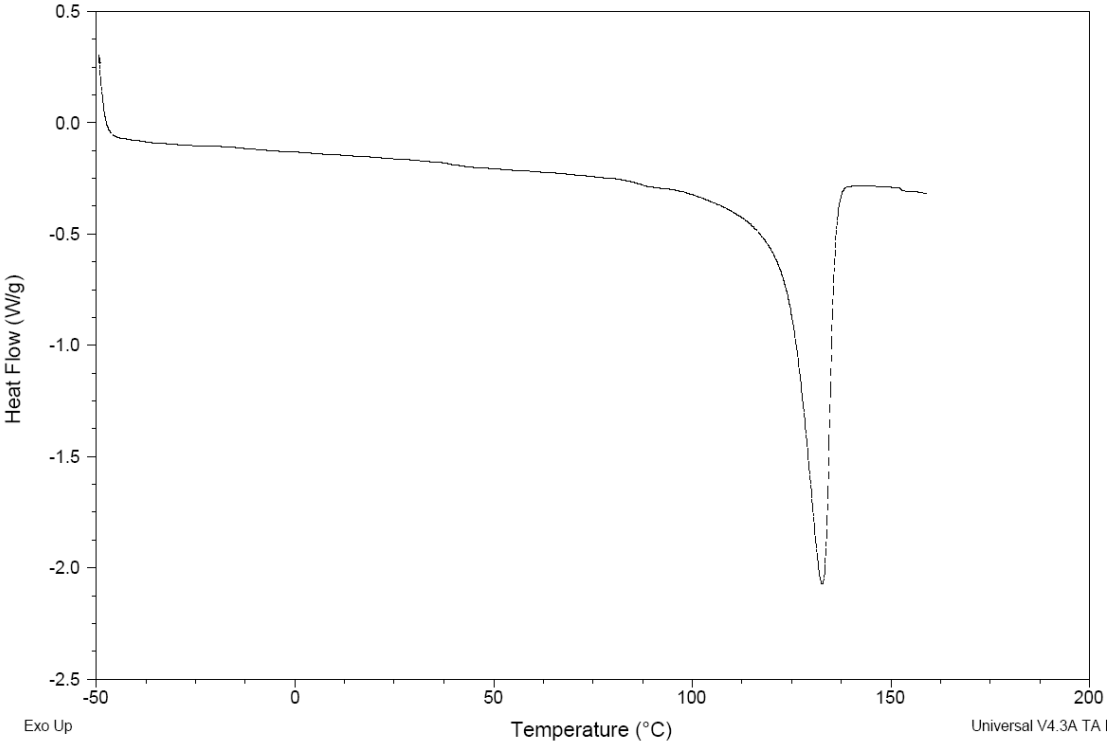
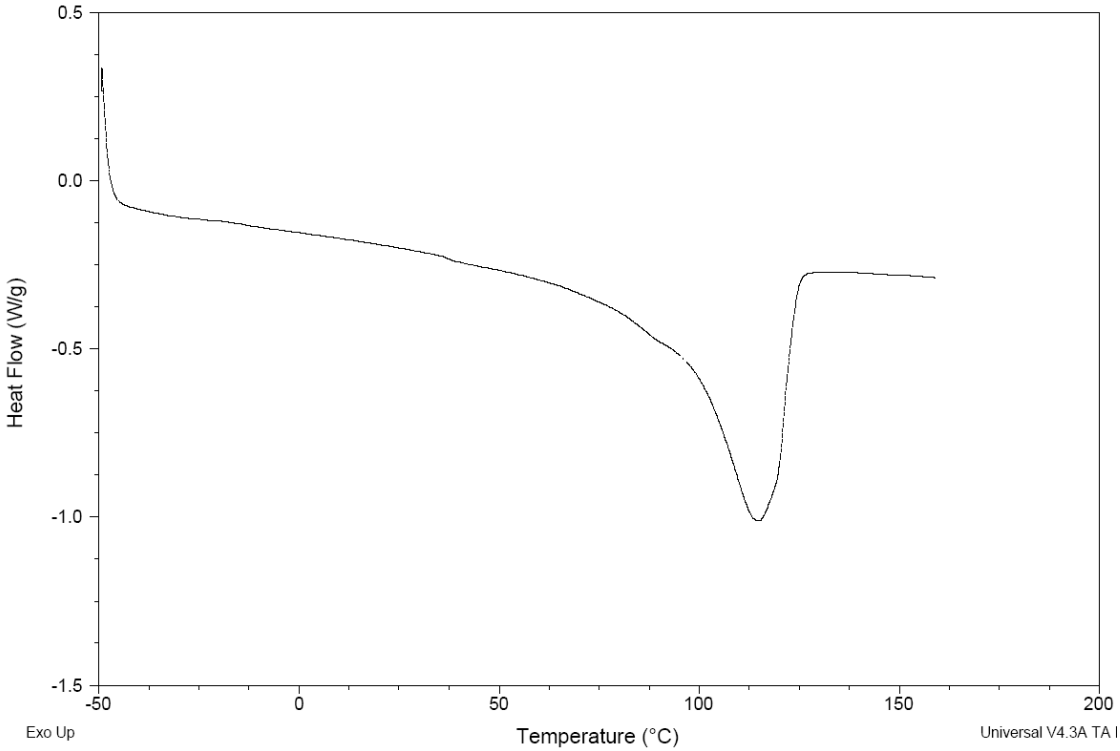
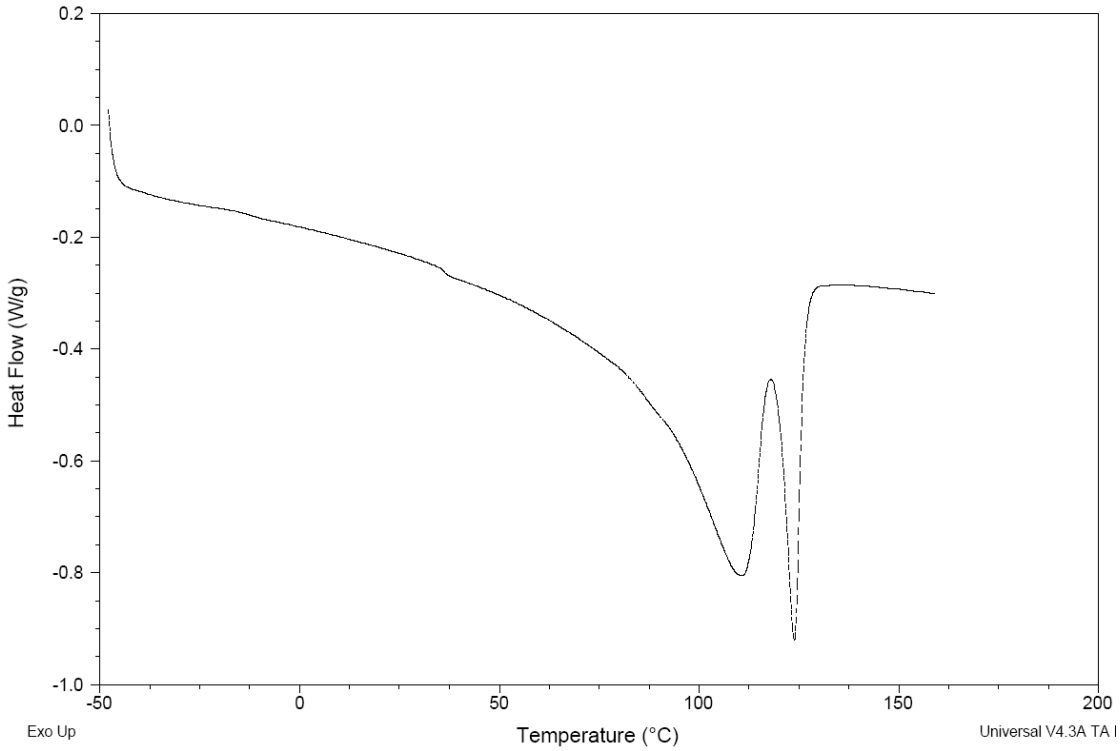


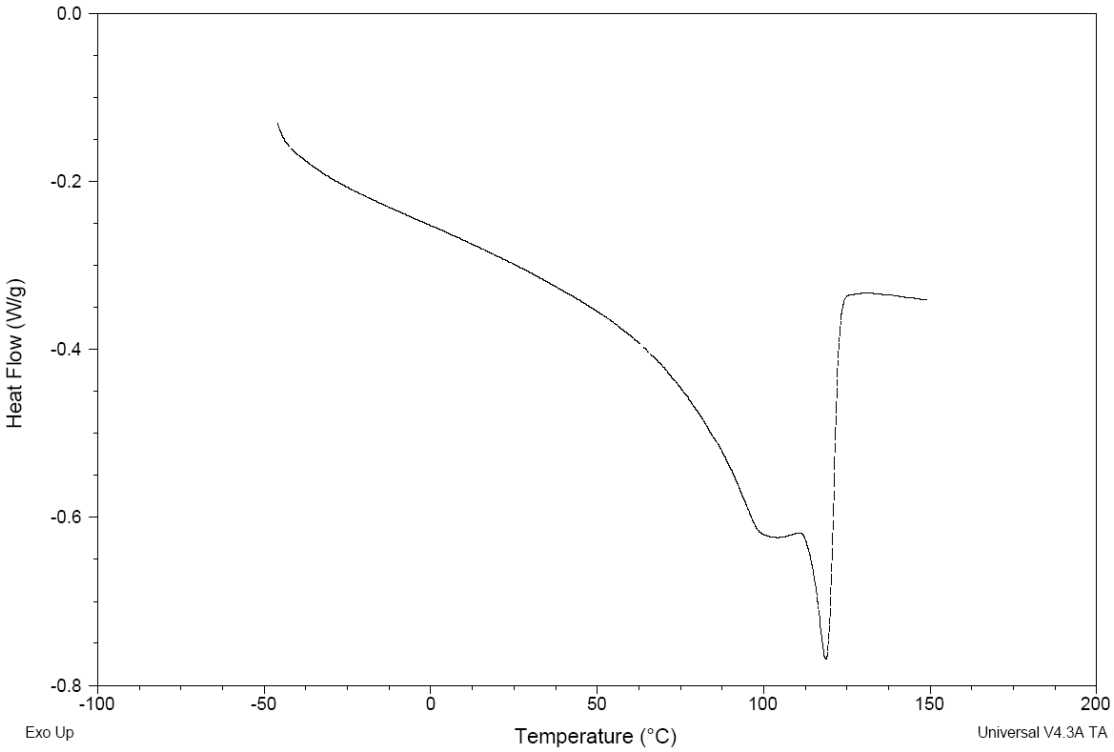
< DSC curve for the polymer generated with **16**>



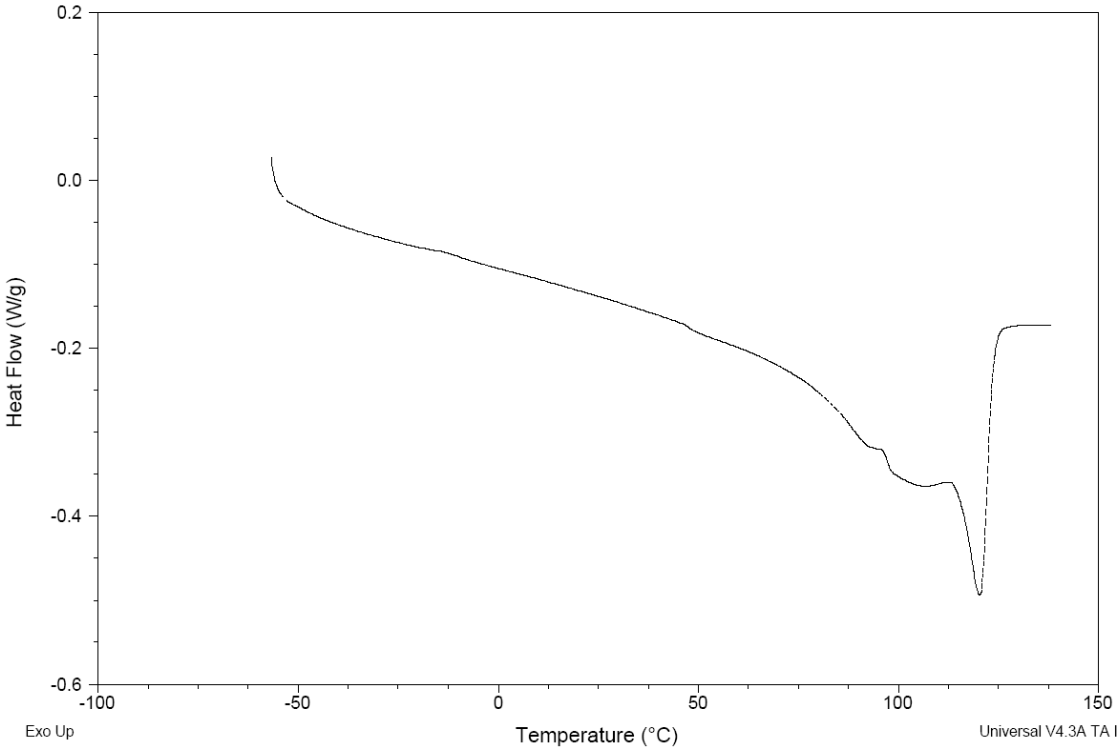
< DSC curve for the polymer generated with **17**>



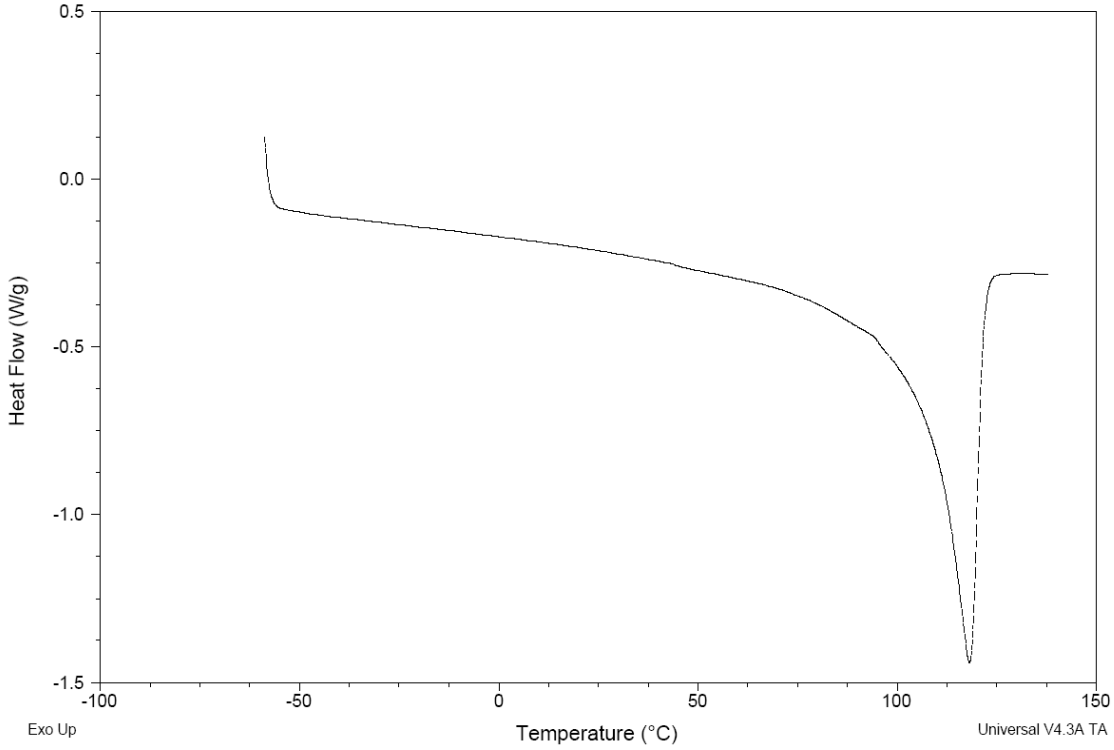
< DSC curve for the polymer generated with **18**>



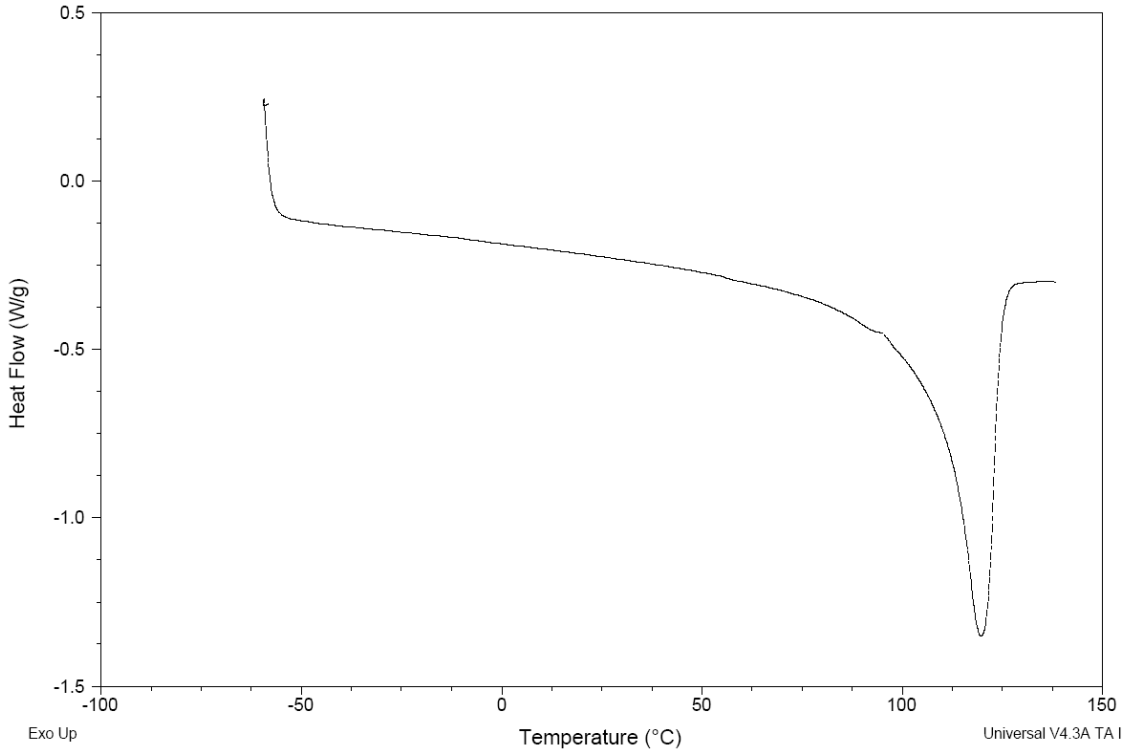
< DSC curve for the polymer generated with **19**>



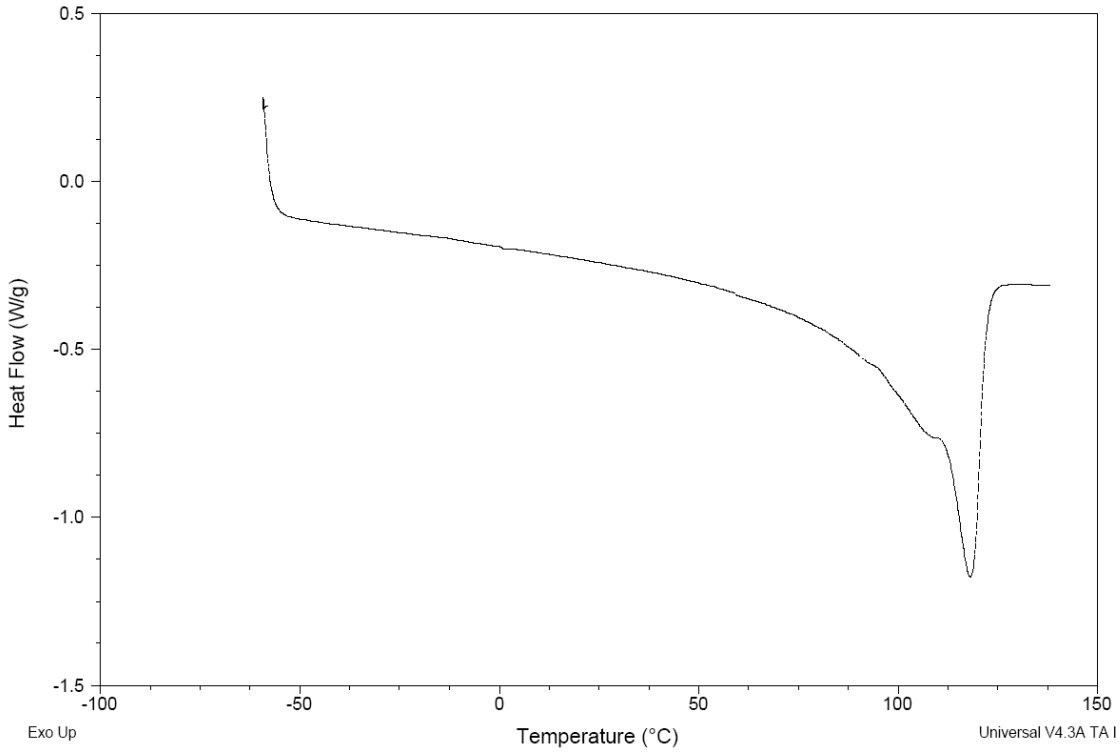
< DSC curve for the polymer generated with **20**>



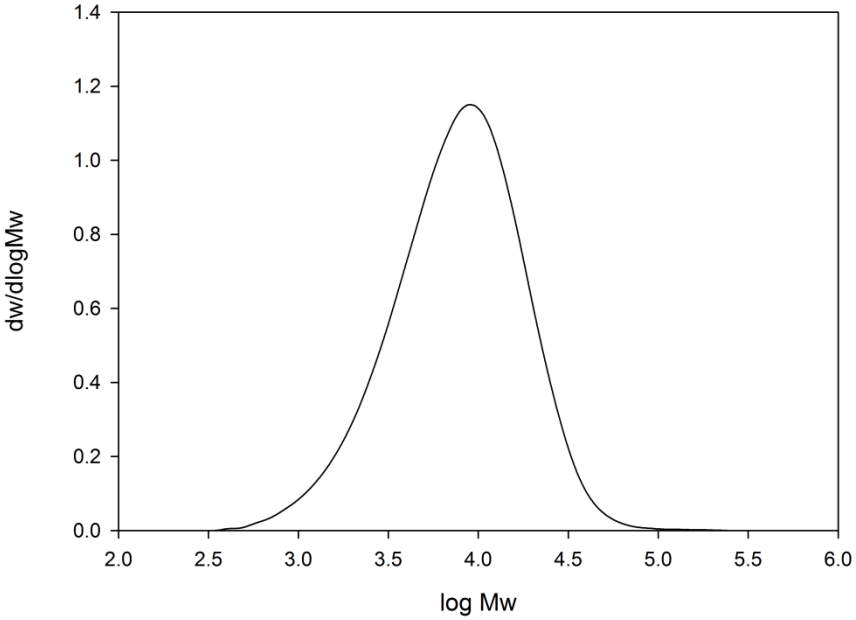
< DSC curve for the polymer generated with **21**>



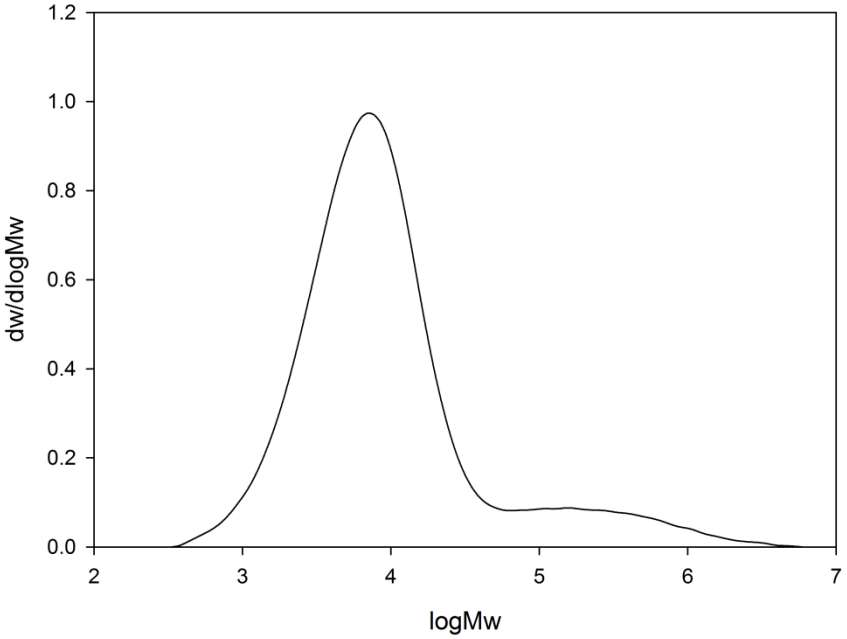
< DSC curve for the polymer generated with **22**>



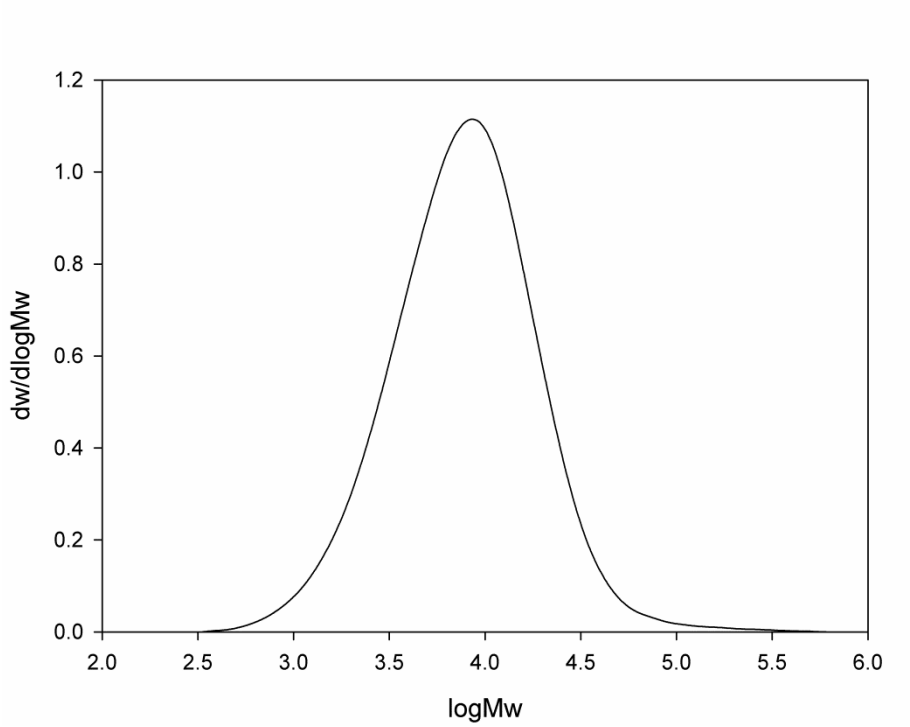
< GPC curve for the polymer generated with **12** (entry 6 in Table 1)>



< GPC curve for the polymer generated with **13** (entry 7 in Table 1)>



< GPC curve for the polymer generated with **16** (entry 10 in Table 1)>



< GPC curve for the polymer generated with **17** (entry 11 in Table 1)>