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Supporting information for article:

Scandium complexes with the tetraphenylethylene and anthracene dianions

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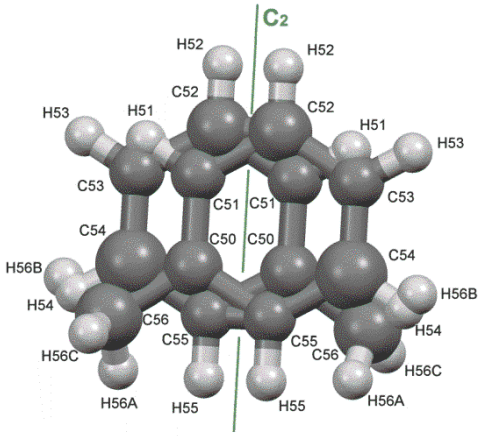

Figure S1 The disorder of the non-coordinating toluene molecule over a two-fold rotation axis in [(1,3-$Ph_2C_5H_3$)Sc(Ph_4C_2)(THF)]•(toluene)$_{0.5}$, (**5b**). Isotropic displacement parameters for C atoms are set to 50% probability level. The atom site occupancies are 50%. All carbon atoms for both molecules lie in the same plane.

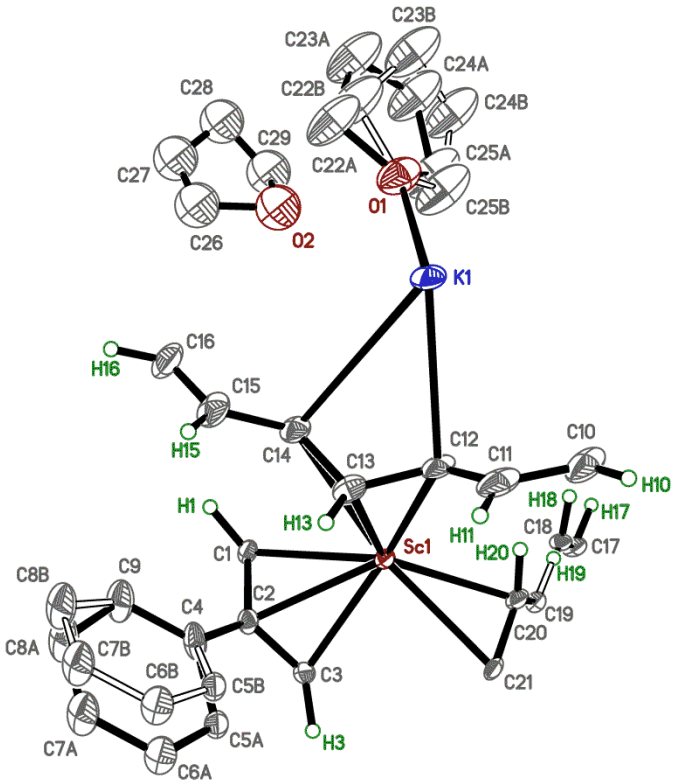

Figure S2 The asymmetric unit of {[K(THF)$_2$]$_2$Sc$_2$(1,3-$Ph_2C_5H_3$)$_2$($C_{14}H_{10}$)$_3$}(THF), (**6**). Atomic displacement ellipsoids are drawn at 30% probability level; H atoms of THF molecules and of Ph groups are omitted for clarity. A disorder of the non-coordinating THF molecule is not shown. Second components of the coordinated THF molecule and Ph group is shown with open solid lines.

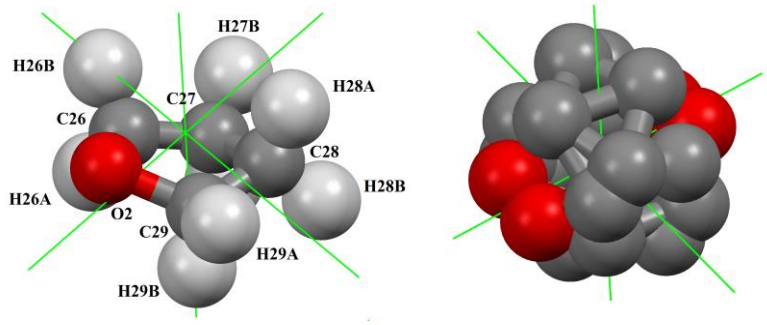

Figure S3 The non-coordinating THF molecule (left) in (**6**), displays the disorder (right, H atoms not shown) generated by three perpendicular 2-fold rotation axes (green). Isotropic displacement parameters for O and C atoms are set to 50% probability level. The atom site occupancies are 25%.

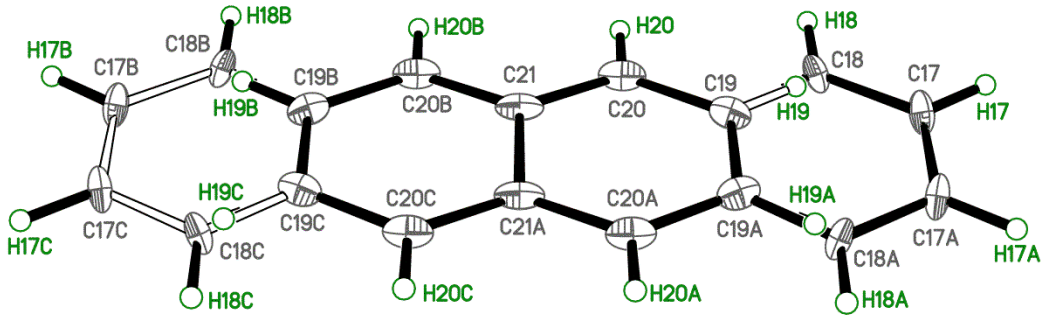

Figure S4 One of disordered anthracene molecules in (**6**). Site occupancies are 100% for atoms C19, C20, H20, and 50% for C21, C17, H17, C18, H18 and H19. Atomic displacement ellipsoids are drawn at 30% probability level. The symmetry codes to generate equivalent atoms: (A) -x+1, -y, -z+1 (a 2-fold rotation axis); (B) x, y, -z+1 (a mirror plane); (C) -x+1, -y, z. The mirror plane is located perpendicular the anthracenide ligand plane, passing through atoms C21, and C21A. The 2-fold rotation axis passes through the ligand plane, going perpendicular to the mirror plane through centers of C21-C21A, C19-C19A, *etc.* bonds.

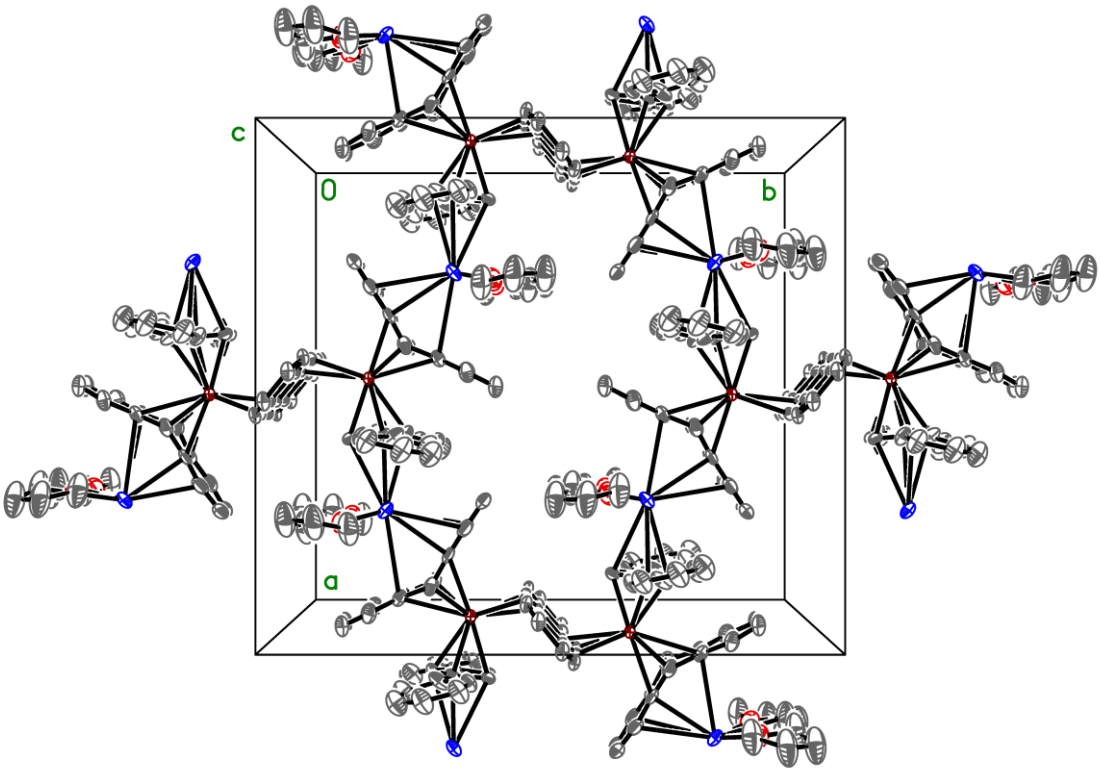

Figure S5 Packing diagram of $[K(THF)_2]_2[(1,3\text{-}Ph_2C_5H_3)_2Sc_2(C_{14}H_{10})_3]_\infty$ in (**6**) parallel to (001). One 2D layer is shown. H atoms, minor disorder components and non-coordinating THF molecules are omitted. Atomic displacement ellipsoids are drawn at 50% probability level.

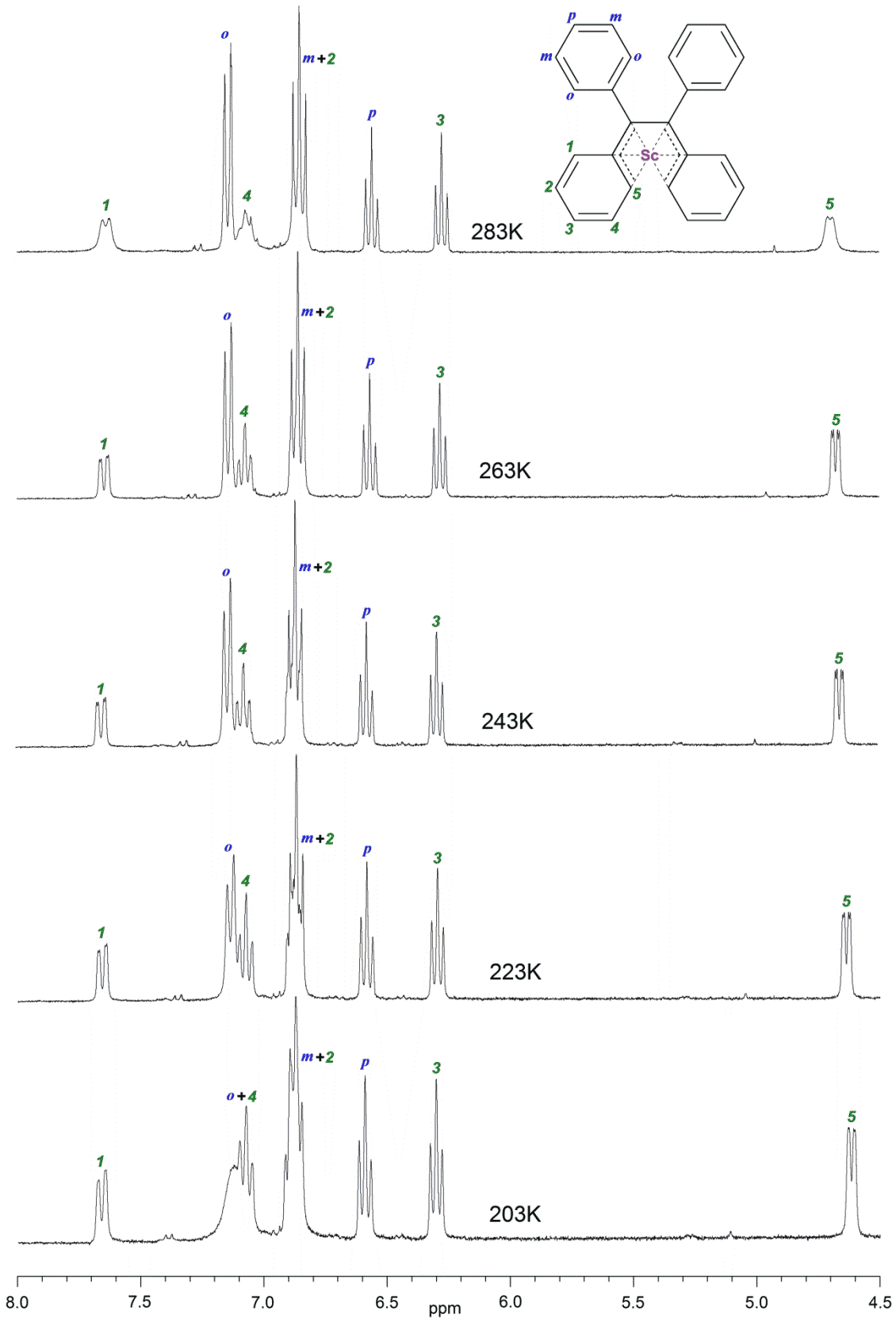

Figure S6 Low temperature ^{1}H NMR spectra of $Na[Sc(Ph_4C_2)_2]$ in $THF_{d\text{-}8}$ at 300MHz

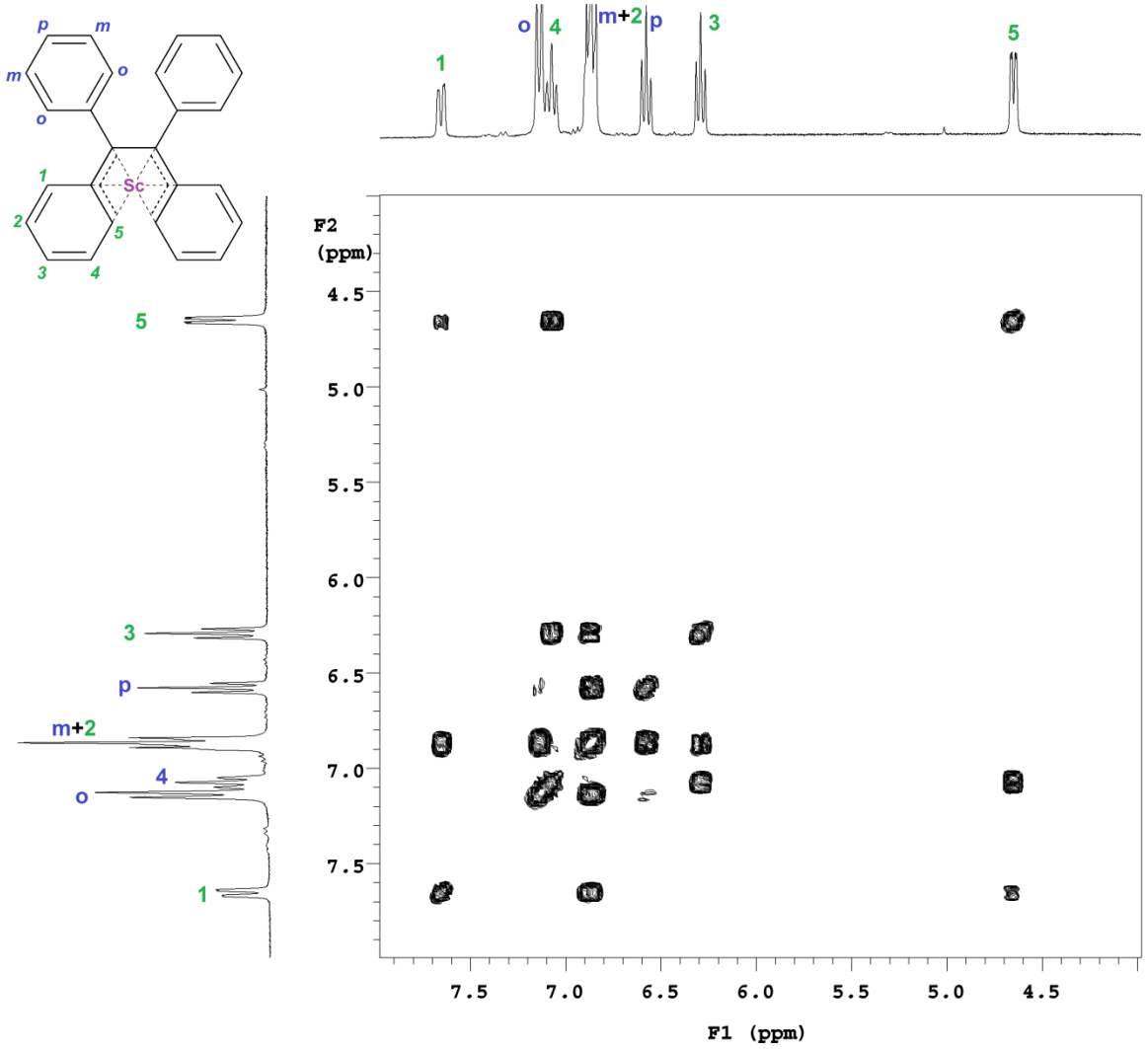

Figure S7 COSY ^{1}H-^{1}H NMR spectrum of Na[Sc(Ph_4C_2)$_2$] in $THF_{d\text{-}8}$ at 243K (300MHz)

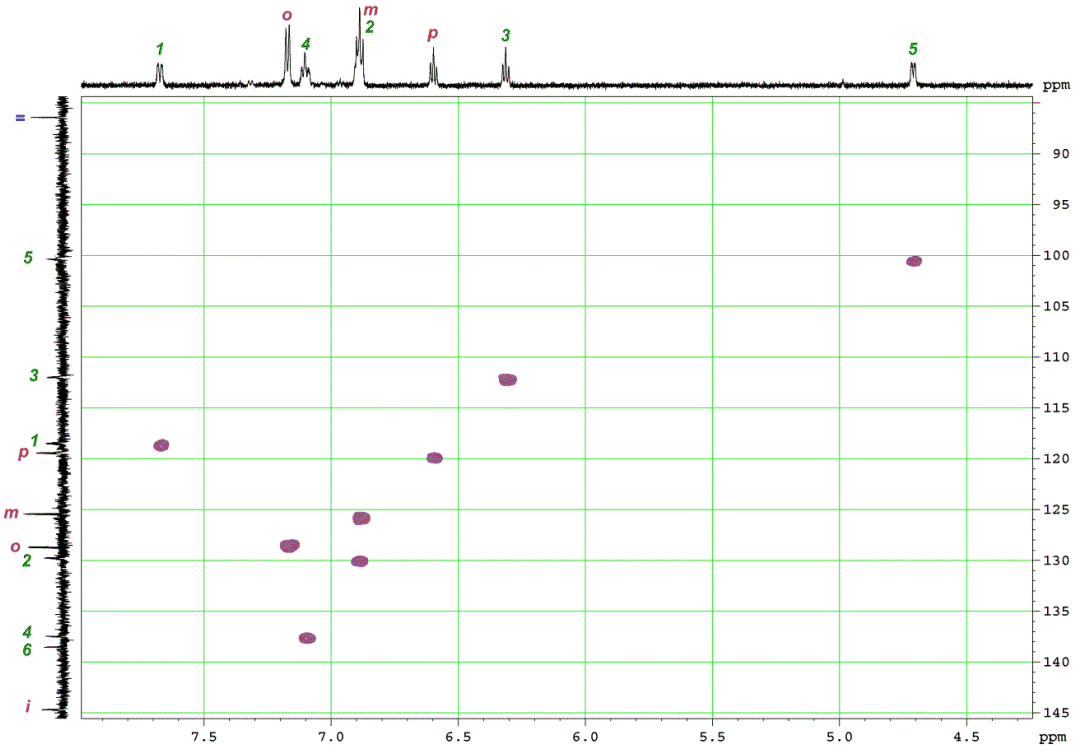

Figure S8 HSQC ^{1}H-^{13}C NMR spectrum of Na[Sc(Ph$_4$C$_2$)$_2$] in THF$_{d\text{-}8}$ at 260K (600MHz and 151MHz)

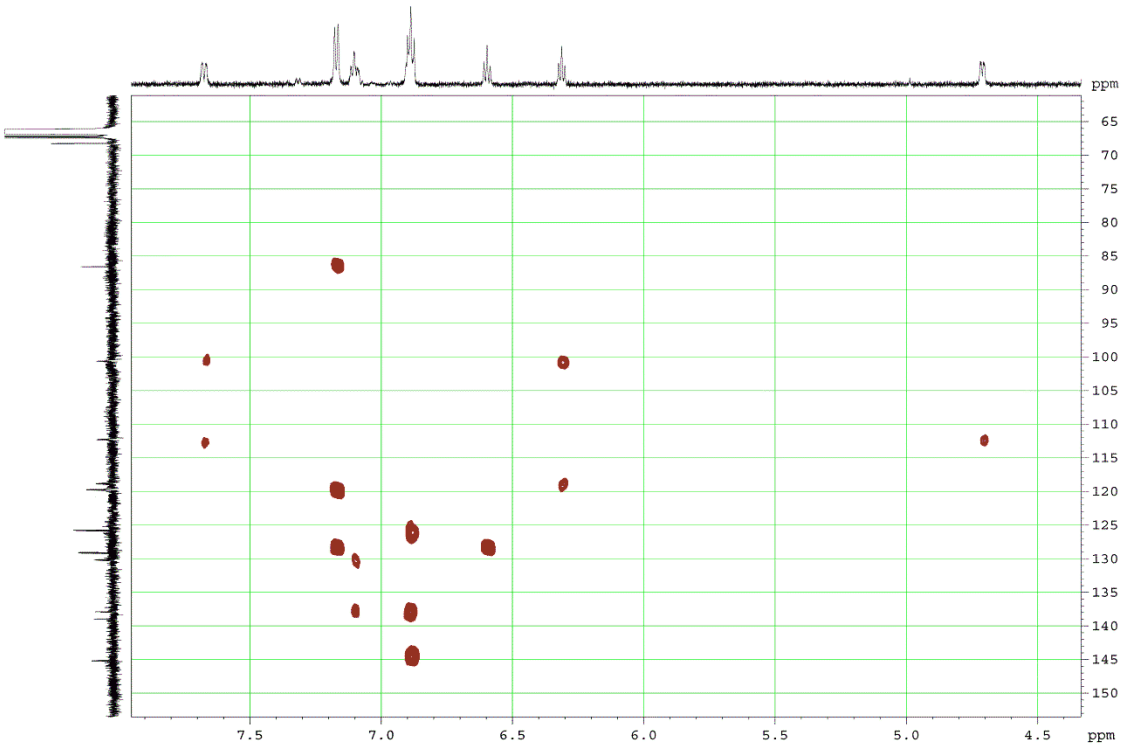

Figure S9 HMBC ^{1}H-^{13}C NMR spectrum of Na[Sc(Ph$_4$C$_2$)$_2$] in THF$_{d\text{-}8}$ at 260K (600MHz and 151MHz).

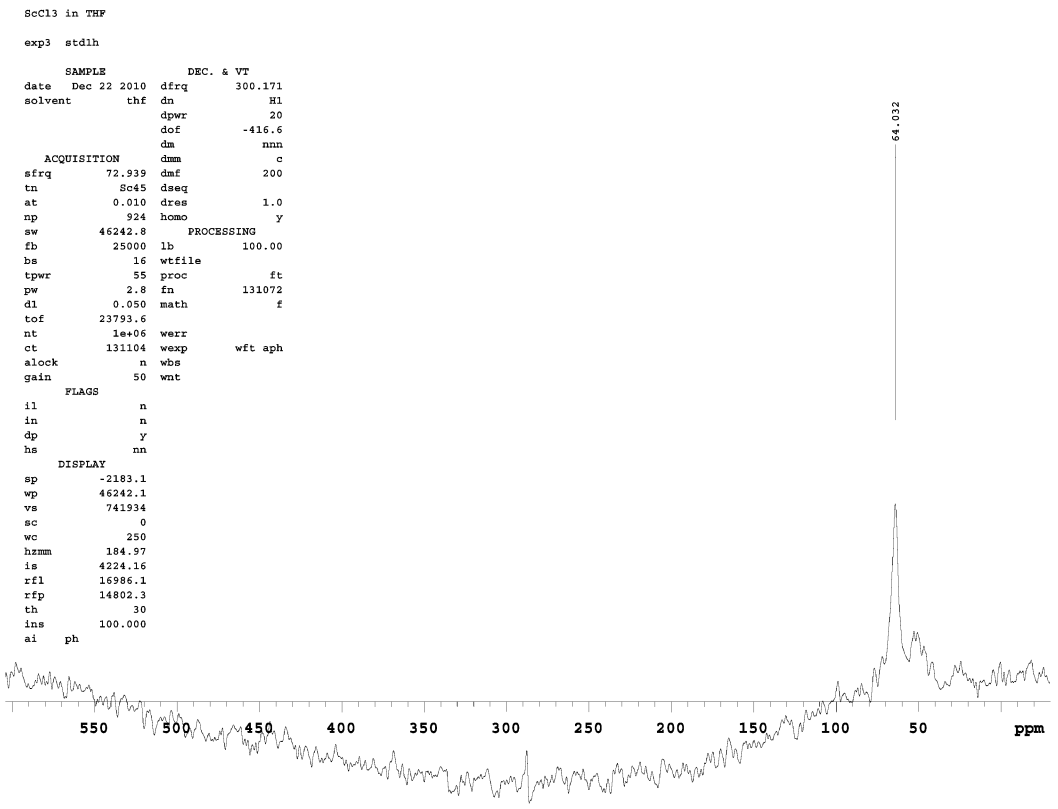

Figure S10 ^{45}Sc NMR spectrum of $K[Sc(Ph_4C_2)_2]$ in $THF_{d\text{-}8}$ at 72.94MHz.

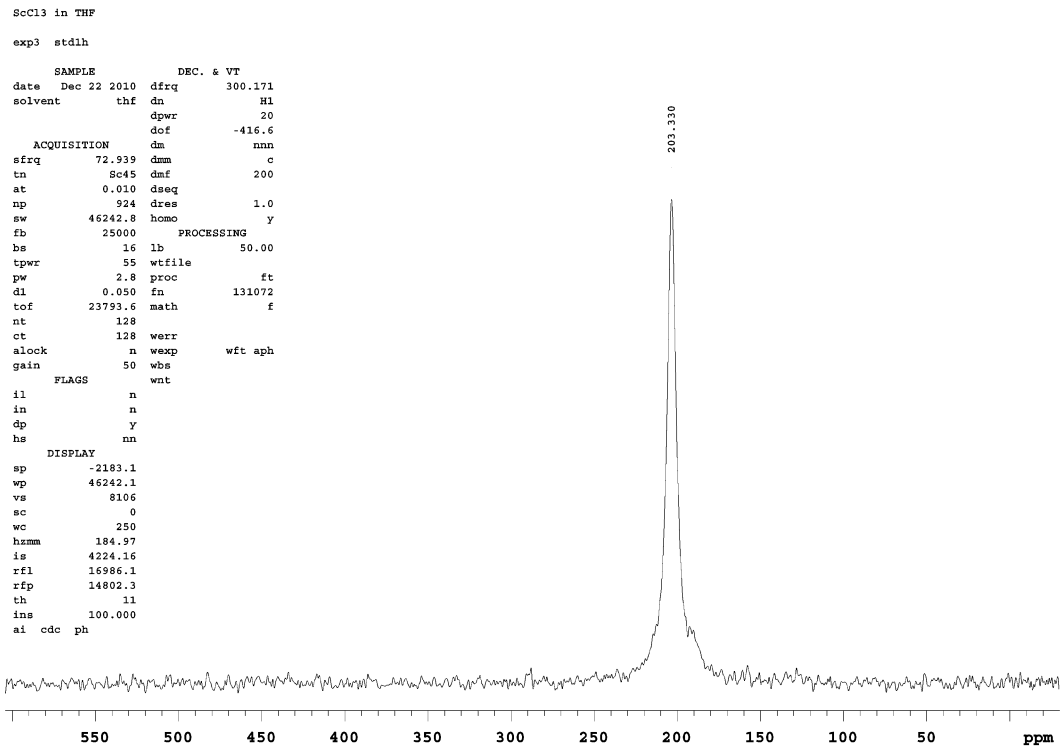

Figure S11 ^{45}Sc NMR spectrum of $ScCl_3(THF)_3$ in $THF_{d\text{-}8}$ at 72.94MHz.