Supplementary Material

A homoleptic tetravalent cerium silylamide

Alan R. Crozier,[a] Andre M. Bienfait,[a] Cäcilia Maichle-Mössmer,[b] Karl W. Törnroos[a] and Reiner Anwander*[b]

[a] *Department of Chemistry, University of Bergen, Allégaten 41, N-5007 Bergen, Norway*
[b] *Institut für Anorganische Chemie, Universität Tübingen, Auf der Morgenstelle 18, 72076 Tübingen, Germany. E-mail: reiner.anwander@uni-tuebingen.de*

Electronic Supplementary Material (ESI) for Chemical Communications

Experimental Details

General Procedures. All manipulations were performed with rigorous exclusion of air and water in an argon-filled glovebox (*MBraun MB150B-G*; <1 ppm O_2, <1 ppm H_2O). Hexane, toluene, and tetrahydrofuran were purified by using Grubbs columns (*MBraun SPS-800*, solvent purification system) and stored in a glovebox. Benzene-$[D]_6$ was obtained from *Aldrich*, degassed, dried over Na for 24 h, and filtered. Complex **1**[2b] and $PhICl_2$[18] were synthesised according to modified literature procedures. Complex **1a**[19] was synthesised from $Ce[N(SiMe_3)_2]_3$ with excess tetramethyldisilazane (*ABCR*) in hexane. Trityl chloride (≥97%), hexachloroethane (99%) and hexamethylbenzene (99%) were purchased from *Sigma-Aldrich* and used as received. NMR spectra were recorded on a *Bruker-AVANCE-DMX400* spectrometer (5 mm BB, ^1H: 400.13 MHz) in $[D]_6$-benzene at 25 °C. ^1H, ^{13}C and ^{29}Si shifts are referenced to internal solvent resonances and reported relative to TMS. IR spectra were recorded on either a *NICOLET Impact 410 FTIR* or a *NICOLET 6700 FTIR* spectrometer using a DRIFT chamber with dry KBr/sample mixtures and KBr windows, collected data were converted using the Kubelka-Munk refinement. CHN elemental analysis was performed on an *Elementar Vario MICRO cube.*

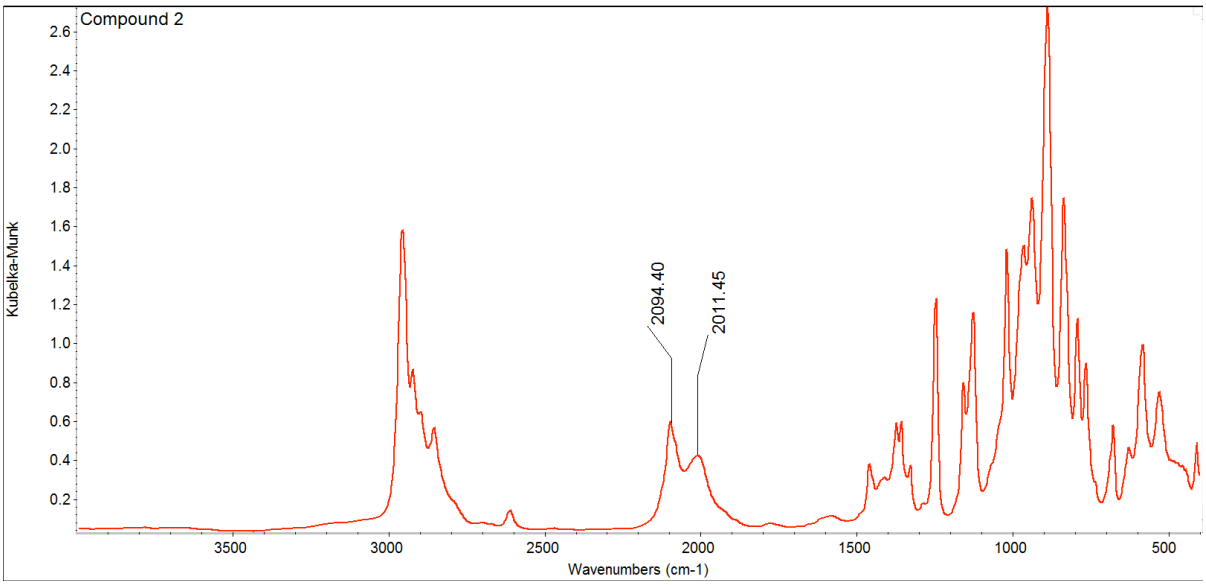

Figure S1 DRIFT spectrum of compound **2**.

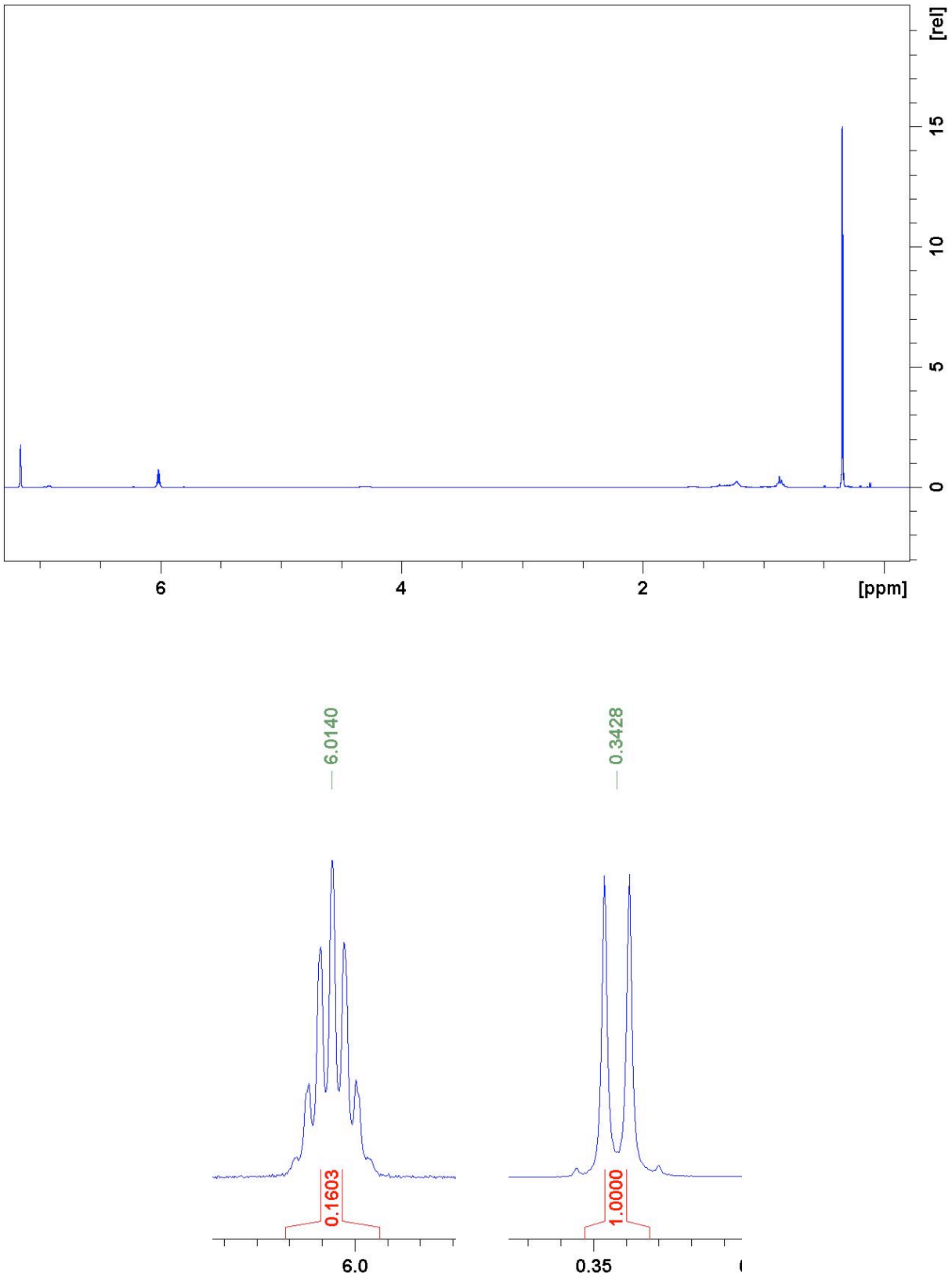

Figure S2 ^{1}H NMR (400 MHz) spectrum of compound **2** in [D_6]benzene.

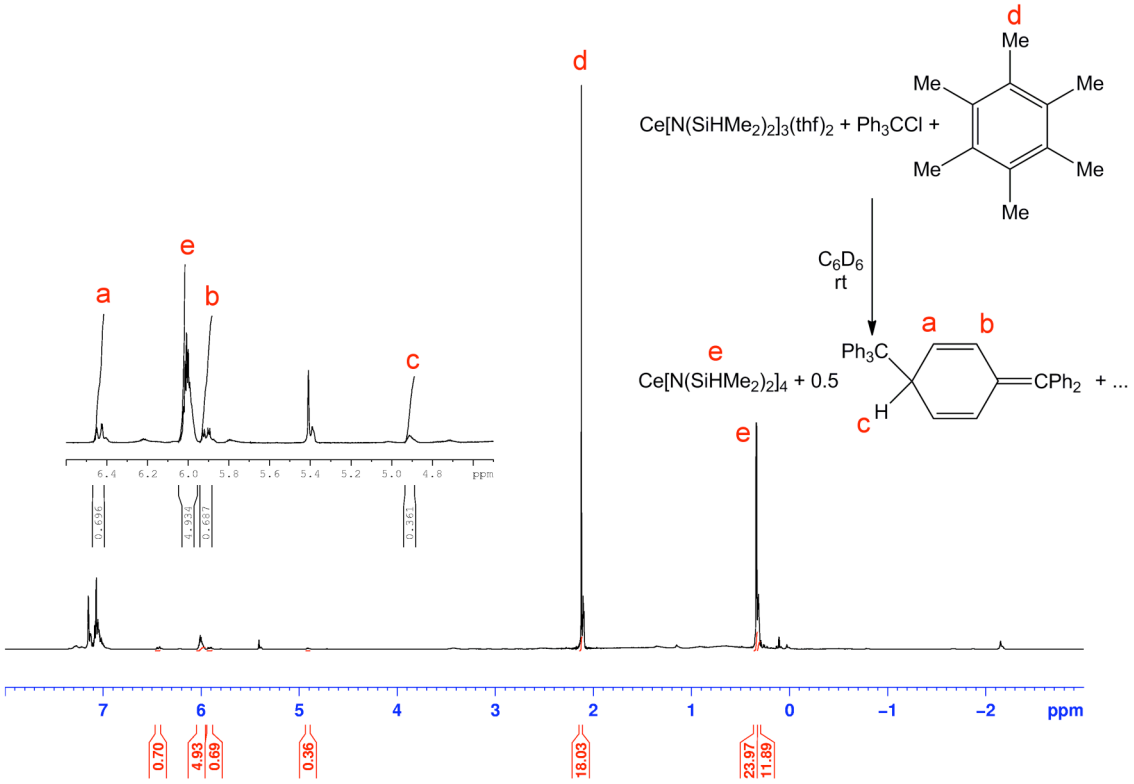

Figure S3. ^{1}H NMR (400 MHz) spectrum of $Ce[N(SiHMe_2)_2]_3(thf)_2$ oxidation by Ph_3CCl in [D_6]benzene.