

Chapter 6

**Cooperative Bimetallics:
Synthesis, Characterisation and Reactivity Studies
of a New Sodium Zincate
Derived from a Difunctional Amine**

Supporting Information

Table of Figures

| | |
|--|---|
| Figure S1 ^1H NMR Spectrum of $[(\text{TMEDA})\text{Na}(\mu\text{-BD})(\mu\text{-}^t\text{Bu})\text{Zn}(^t\text{Bu})]$ (25)..... | 4 |
| Figure S2 ^{13}C NMR Spectrum of $[(\text{TMEDA})\text{Na}(\mu\text{-BD})(\mu\text{-}^t\text{Bu})\text{Zn}(^t\text{Bu})]$ (25)..... | 4 |
| Figure S3 ^1H NMR spectrum of “ $\text{NaZn}(\text{BD})(^t\text{Bu})_2$ ” (26)..... | 5 |
| Figure S4 ^{13}C NMR spectrum of “ $\text{NaZn}(\text{BD})(^t\text{Bu})_2$ ” (26)..... | 5 |
| Figure S5 ^1H NMR spectrum of $[\{(\text{BD})\text{Zn}(^t\text{Bu})\}_2]$ (27)..... | 6 |
| Figure S6 ^{13}C NMR spectrum of $[\{(\text{BD})\text{Zn}(^t\text{Bu})\}_2]$ (27)..... | 6 |

Additional Crystal Information

Table S1 Crystallographic data and refinement details for compounds **25** and **27**.

| Compound | 25 | 27 |
|---|---|--|
| Empirical formula | C ₂₅ H ₅₁ N ₄ NaZn | C ₃₀ H ₅₂ N ₄ Zn ₂ |
| M _r (g mol ⁻¹) | 496.06 | 599.50 |
| Crystal system | Triclinic | Triclinic |
| Space group | P-1 | P-1 |
| <i>a</i> /Å | 9.0408(3) | 13.0422(5) |
| <i>b</i> /Å | 11.2678(3) | 13.0894(5) |
| <i>c</i> /Å | 15.1689(5) | 14.3441(5) |
| α (°) | 82.377(2) | 75.391(3) |
| β (°) | 82.929(2) | 75.496(3) |
| γ (°) | 74.824(3)° | 84.222(3) |
| <i>V</i> /Å ³ | 1471.87(8) | 2292.22(15) |
| <i>Z</i> | 2 | 3 |
| Measured reflections | 16520 | 15107 |
| Unique reflections | 7728 | 9483 |
| R _{int} | 0.0289 | 0.0260 |
| Observed rflns [<i>I</i> > 2σ(<i>I</i>)] | 6706 | 7995 |
| μ (mm ⁻¹) | 0.866 | 1.594 |
| No. of parameters | 315 | 501 |
| <i>R</i> [on <i>F</i> , obs rflns only] | 0.0330 | 0.0332 |
| <i>wR</i> [on <i>F</i> ² , all data] | 0.0793 | 0.0789 |
| GoF | 1.035 | 1.060 |
| Largest diff. peak/hole/e Å ⁻³ | 0.385/-0.324 | 0.444/-0.519 |

NMR Spectra

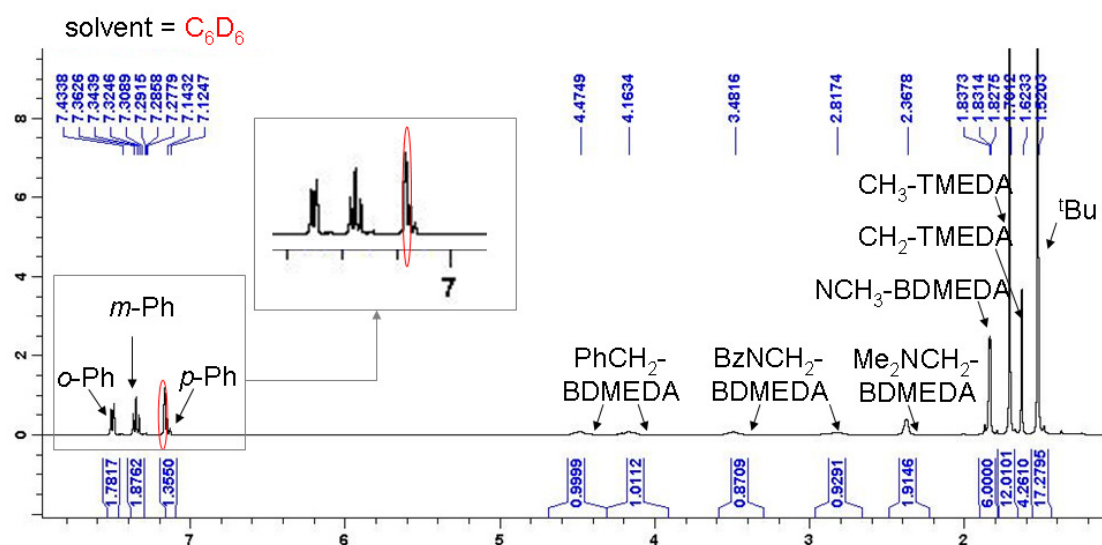


Figure S1 1H NMR Spectrum of [(TMEDA)Na(μ -BD)(μ -^tBu)Zn(^tBu)] (25).

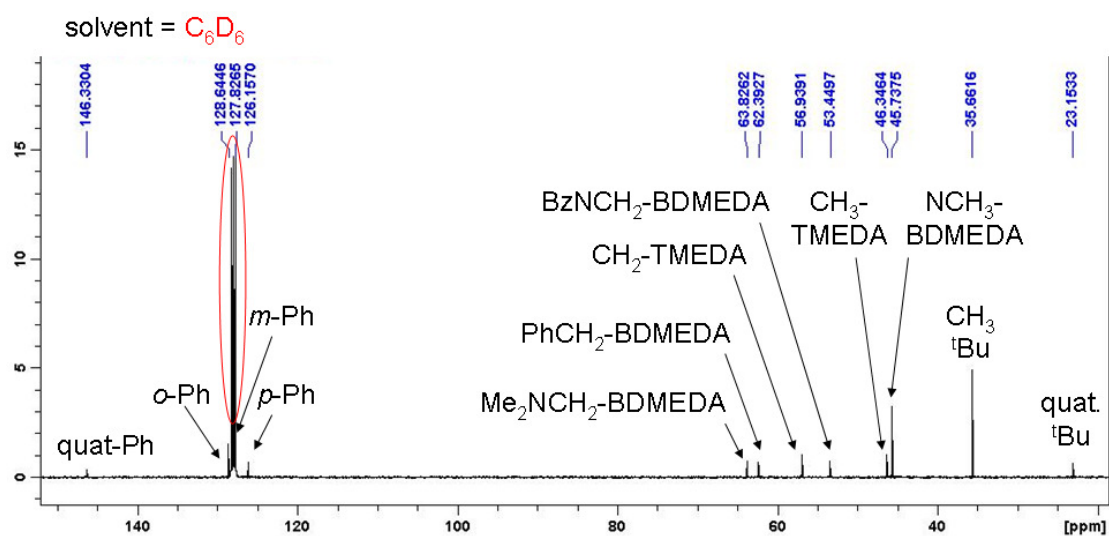


Figure S2 ^{13}C NMR Spectrum of [(TMEDA)Na(μ -BD)(μ -^tBu)Zn(^tBu)] (25).

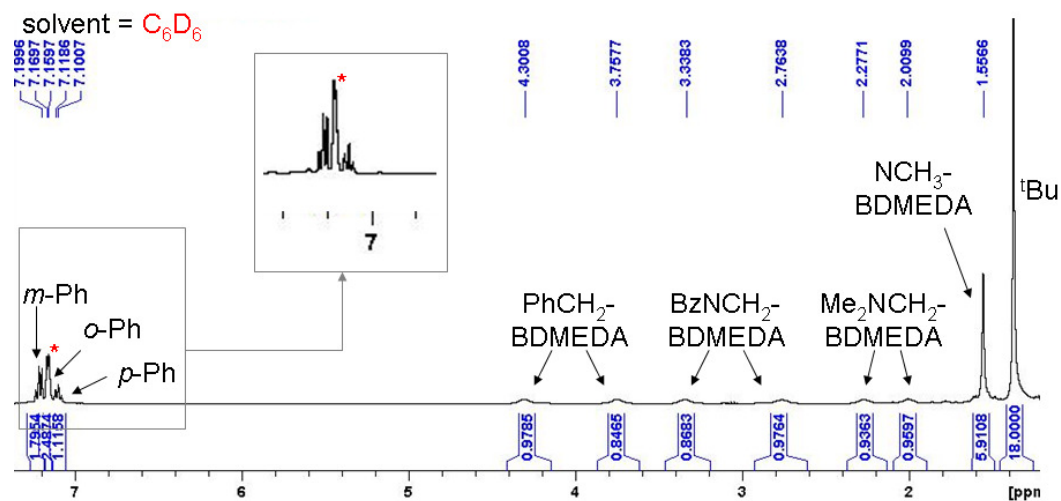


Figure S3 1H NMR spectrum of “ $NaZn(BD)(tBu)_2$ ” (**26**).

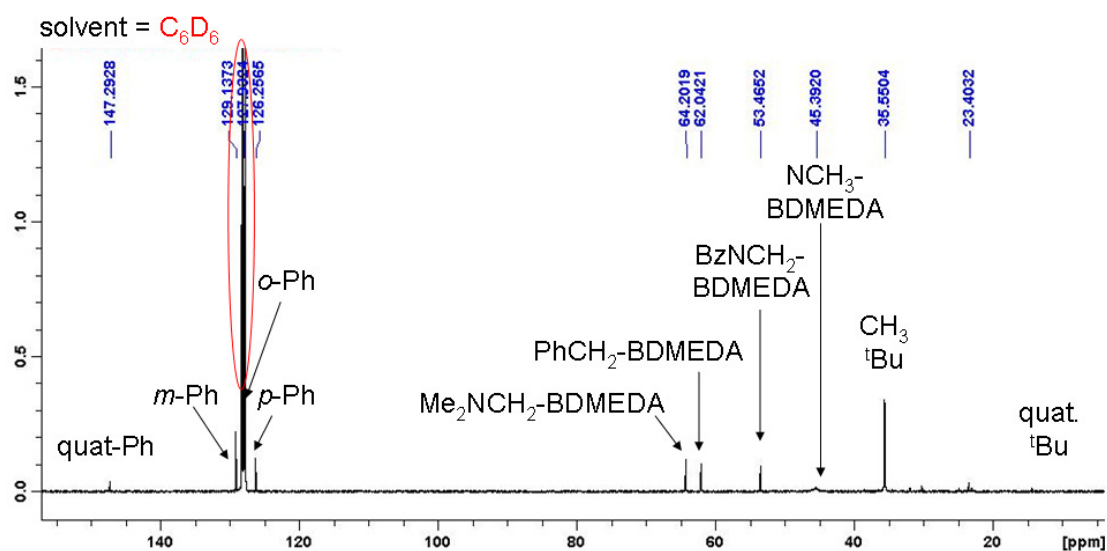


Figure S4 ^{13}C NMR spectrum of “ $NaZn(BD)(tBu)_2$ ” (**26**).

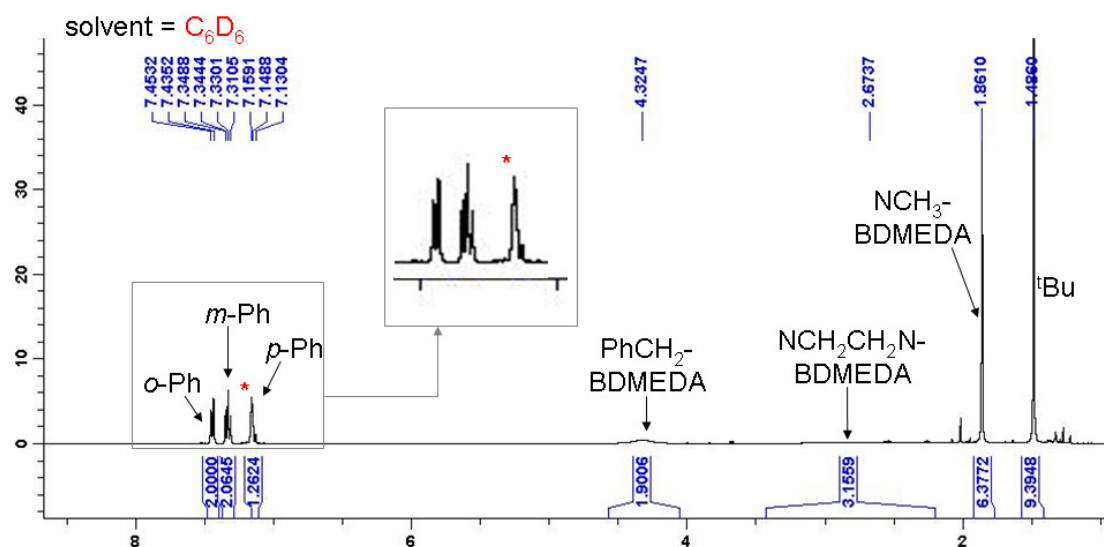


Figure S5 ^1H NMR spectrum of $[(\text{BD})\text{Zn}(\text{tBu})_2]$ (**27**).

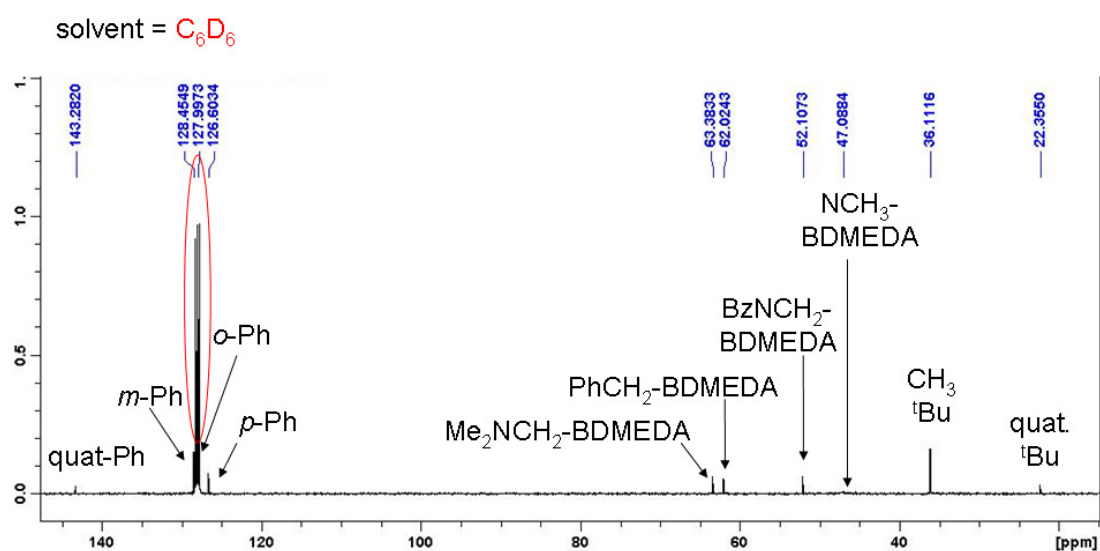


Figure S6 ^{13}C NMR spectrum of $[(\text{BD})\text{Zn}(\text{tBu})_2]$ (**27**).