

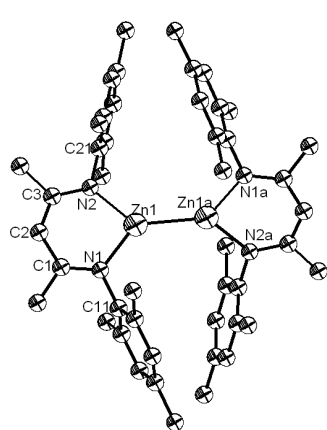
Synthesis and Reactivity of Zinc(I) Complexes

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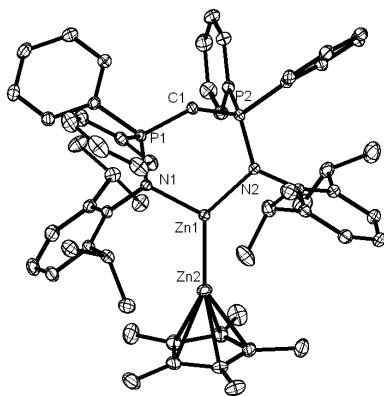
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The synthesis and structural characterization of decamethyldizincocene [Cp^*_2Zn_2] **1** by Carmona et al. was a landmark in organozinc chemistry since **1** was the first stable compound containing a Zn-Zn-bond.^[1] Since then, several subvalent zinc-compounds were synthesized,^[2,3] typically by reductive coupling reactions (Wurtz-coupling).

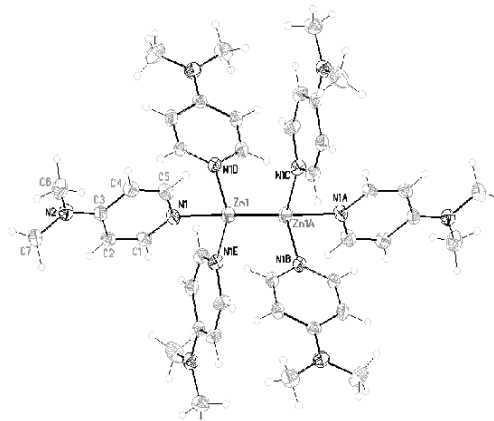
We herein report on novel synthetic procedures for zinc(I) complexes and their crystal structures including $\text{dmap}_2\text{Zn}(\text{Cp}^*)\text{-ZnCp}^*$ **2**,^[4] the first Lewis-base adduct of decamethyldizincocene. Moreover, **1** was found to react with N-H and C-H acidic ligands such as β -diketiminates and bis-phosphorane(imino)methanes under Cp^*H elimination and subsequent formation of homoleptic and heteroleptic complexes such as $(\text{Mesnacnac})_2\text{Zn}_2$ **3**,^[5] $[\text{HC}(\text{Ph}_2\text{P}=\text{NPh})_2]_2\text{Zn}_2$ **4** and $[\text{HC}(\text{Ph}_2\text{P}=\text{N-Dipp})_2]\text{Zn-ZnCp}^*$ **5**, respectively.^[6] Moreover, $[\text{Zn}_2(\text{dmap})_6][\text{Al}(\text{OC}(\text{CF}_3)_3)_4]$ **6** containing the base-stabilized dikation was obtained from the reaction of Cp^*_2Zn_2 with $[\text{H}(\text{OEt}_2)_2][\text{Al}(\text{OC}(\text{CF}_3)_3)_4]$.^[7] Very recently, we developed a new synthetic pathway to Zn(I) complexes using potassium salts of organic ligands. Reaction of **1** with $\text{K}[\text{HB}(3,5\text{-Me}_2\text{pz})_3]$ was found to occur with elimination of Cp^*K and subsequent formation of $\text{Zn}_2[\text{HB}(3,5\text{-Me}_2\text{pz})_3]_2$ **7**.^[8]



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References

- [1] I. Resa, E. Carmona, E. Gutierrez-Puebla, A. Monge, *Science* **2004**, 305, 1136; [2] Y. Wang, B. Quillian, P. Wei, H. Wang, X.-J. Yang, Y. Xie, R. B. King, P. v. R. Schleyer, H. F. Schaefer III, G. H. Robinson, *J. Am. Chem. Soc.* **2005**, 127, 11944; [3] Z. Zhu, R. J. Wright, M. M. Olmstead, E. Rivard, M. Brynda, P. P. Power, *Angew. Chem. Int. Ed.* **2006**, 45, 5807; [4] D. Schuchmann, U. Westphal, S. Schulz, U. Flörke, D. Bläser, R. Boese, *Angew. Chem. Int. Ed.*, **2009**, 48, 807; [5] S. Schulz, D. Schuchmann, U. Westphal, M. Bolte, *Organometallics* **2009**, 28, 1590; [6] S. Schulz, D. Schuchmann, S. Gondzik, L. Dobrzycki, D. Bläser, R. Boese, S. Harder, *Chem. Comm.* submitted; [7] S. Schulz, D. Schuchmann, I. Krossing, D. Himmel, D. Bläser, R. Boese, *Angew. Chem. Int. Ed.* **2009**, 48, 5748; [8] S. Schulz, S. Gondzik, R. Schäper, R. Boese, manuscript in preparation.