Novel Synthetic Routes to *s*-Block Metal 2,5-Diphenylphospholides and Crystal Structures of the Bis(tetrahydrofuran) Complexes of the Potassium, Calcium, and Strontium Derivatives

Katja Wimmer, Christin Birg, Robert Kretschmer, Tareq M. A. Al-Shboul, Helmar Görls, Sven Krieck, and Matthias Westerhausen

Institut für Anorganische und Analytische Chemie, Friedrich-Schiller-Universität Jena, August-Bebel-Str. 2, 07743 Jena, Germany

Reprint requests to Prof. Dr. M. Westerhausen. Fax: +49 3641 948102. E-mail: m.we@uni-jena.de

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The reduction of 1,4-diphenyl-1,4-bis(diphenylphosphanyl)buta-1,3-diene (**1**) (1,4-diphenyl-NUPHOS) with potassium in THF yields bis(THF)potassium 2,5-diphenylphospholide (**2**) which crystallizes with a chain structure. The metathesis reaction of **2** with the iodides of calcium, strontium, and barium leads to the formation of [bis(THF)calcium bis(2,5-diphenylphospholide)] (**3**), [bis(THF)strontium bis(2,5-diphenylphospholide)] (**4**), and [bis(THF)barium bis(2,5-diphenylphospholide)] (**5**). The reaction of $M\{P(H)Si\mathit{i}Pr_3\}_2$ with diphenylbutadiyne in THF also leads to the formation of the 2,5-diphenylphospholides of calcium (**3**), strontium (**4**), and barium (**5**). The molecular structures of **2** to **4** are discussed. The environment of the metal atoms is very similar in all these compounds: The metal atoms show an η^5 coordination to the phospholide rings forming a bent sandwich complex. The open coordination site is occupied by two THF molecules.

Key words: Calcium, Potassium, Strontium, Phospholide, Sandwich Complexes, Salt Metathesis Reactions