# An air-stable storage compound for white Phosphorus: Reversible Addition of P_4 to a Stannylene

Beate G. Steller, Michaela Flock, and Roland C. Fischer

Institute of Inorganic Chemistry, Graz University of Technology, 8010 Graz, Austria

Despite its toxic and pyrophoric nature, the application of white phosphorus as a precursor for phosphorus containing compounds is inevitable. [1] Over the last few decades impressive progress was achieved in the targeted conversion of this highly reactive compound using transition metals and main group element compounds over last few decades. [2, 3] In the case of group 14 compounds, reaction chemistry is dominated by NHCs, CAACs and silylenes and examples for heavier group 14 homologues are scarce. [4, 5] Herein, we present the controlled insertion of a stannylene **1** into a single P-P bond of white phosphorus to give the non-pyrophoric, air-stable compound **2**. Upon irradiation with light (354 nm) the title compound releases P_4 quantitatively. Calculations, kinetic data and follow-up chemistry will be presented.

(1)   **(2)**

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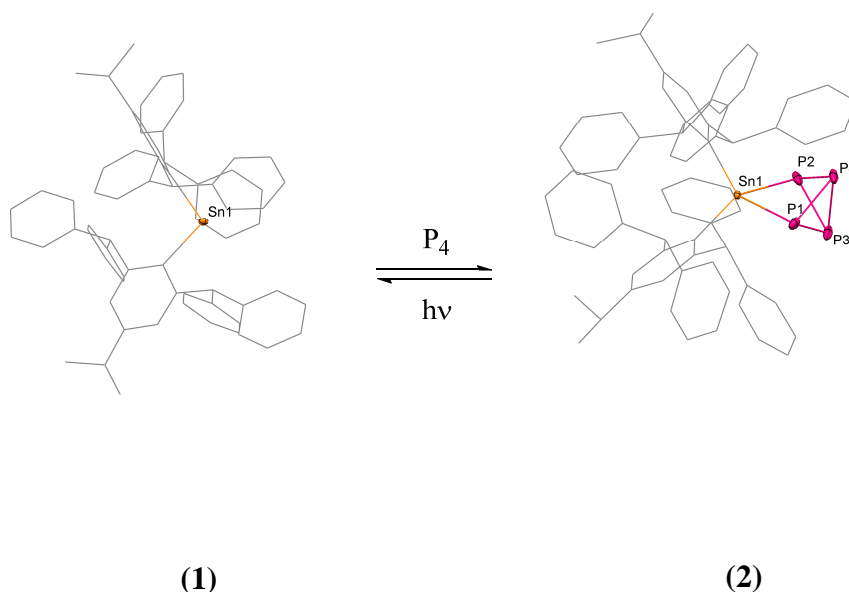
[1] D. E. Corbridge *Phosphorus 2000*, Elsevier, Amsterdam, **2000**. [2] M. Peruzzini, L. Gonsalvi, D. Romerosa, *Chem. Soc. Rev.* **2005**, *34*, 1038-47. [3] M. Scheer, G. Baláz, A. Seitz, *Chem. Rev.* **2010**, *110*, 4236-4256. [4] (a) J. D. Masuda, W. W. Schoeller, B. Donnadieu, G. Bertrand, *Angew. Chem. Int. Ed.* **2007**, *46*, 7052-55. (b) J. D. Masuda, W. W. Donnadieu, G. Bertrand, *J. Am. Chem. Soc.* **2007**, *129*, 14180-1. (c) M. Haaf, T. Schmiedl, T. A. Schmedake, D. R. Powell, A. J. Millevolte, M. Denk, R. West, *J. Am. Chem. Soc.* **1998**, *120*, 12714-9. (d) Y. Xiong, S. Yao, M. Brym, M. Driess, *Angew. Chem. Int. Ed.* **2007**, *46*, 4511-3. [5] (a) S. Khan, R. Michel, J. M. Dieterich, R.A. Mata, H. W. Roesky, J.-P. Demers, A. Lange, D. Stalke, *J. Am. Chem. Soc.* **2011**, *133*, 17889-17894. (b) J. W. Dube, C. M. E. Graham, C. L.B. Macdonald, Z. D. Brown, P.P. Power, P. J. Ragogna, *Chem. Eur. J.* **2014**, *20*, 6739-44.