Scalable Synthesis of $P(SiMe_3)_3$ – An Illustrated Tutorial

Andryj M. Borys*[a]

[a] *Departement für Chemie und Biochemie, Universität Bern, Switzerland.*

andryj.borys-smith@dcb.unibe.ch

Tris(trimethylsilyl)phosphine,[1] $P(SiMe_3)_3$, is a versatile reagent that is widely used to prepare a number of metal clusters and low-coordinate organophosphorus compounds such as phosphaalkynes.[2] It is often exploited as an 'easy to handle' alternative to PH_3 gas and it is a covalent synthon for the P^{3-} anion.

$P(SiMe_3)_3$ is a highly pyrophoric, air- and moisture-sensitive, oily liquid that hydrolyses to produce toxic PH_3 gas. Although it is commercially available, its high cost means that it is instead more commonly prepared on a multigram scale in the laboratory. This 'how to' presentation will detail how to safely synthesise $P(SiMe_3)_3$ on a large scale with the aid of illustrated guides from the Schlenk Line Survival Guide.[3]

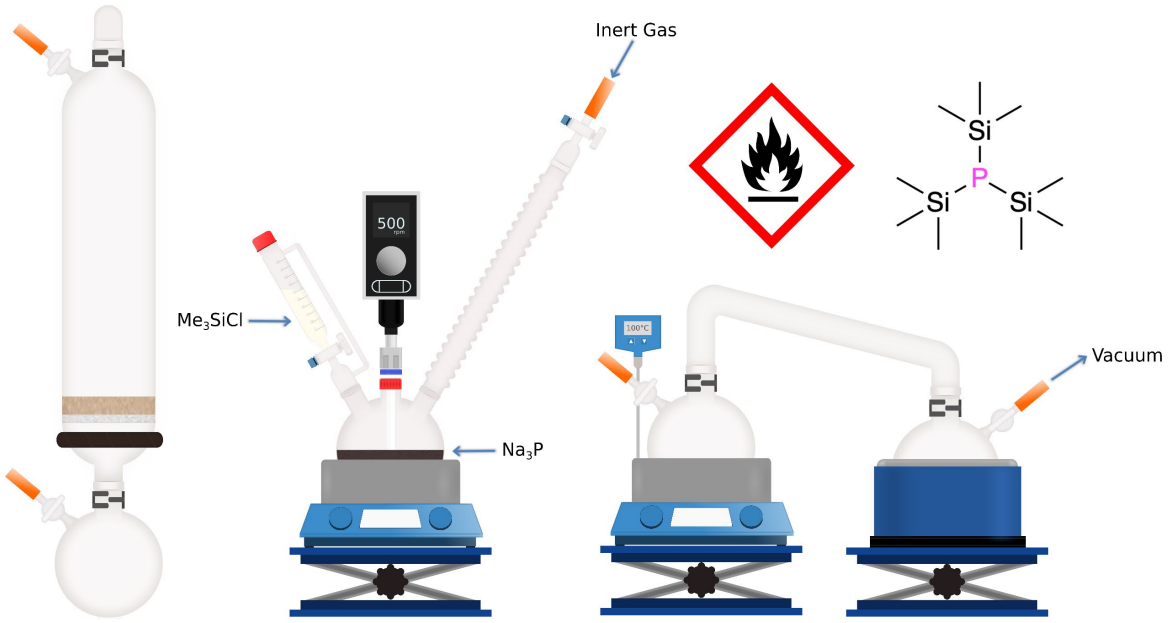

Figure 1: Synthesis of $P(SiMe_3)_3$.

[1] S. A. Kosarev, S. J. Collier. *e-EROS*, **2011** *(doi: 10.1002/047084289X.rn01332)*
[2] C. A. Russell, N. S. Townsend. *Phosphorus(III) Ligands in Homogenous Catalysis: Design and Synthesis.* **2012**, *Chapter 11 (doi: 10.1002/9781118299715.ch11)*
[3] A. M. Borys. schlenklinesurvivalguide.com/psime$_{33}$/