



Trimethylsilyl-substituted triazaphospholes: formation of an unprecedented phosphoruscontaining mesoionic carbene

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Introduction

Recently, we reported the successful synthesis of 3H-1,2,3,4triazaphospholenium salts (1) which represent the formal phosphorus congeners of the well-known mesoionic 1,2,3-triazolylidenes (2).^[2,3] We have now expanded the scope to $(CH_3)_3$ Si-substituted 3H-1,2,3,4-triazaphospholenium salts. During the study of protodesilylation reactions of these compounds, we observed the formation of an unprecedented BF₃-adduct of a phosphorus-

3H-1,2,3,4-Triazaphospholes

can easily be synthesized in a [3+2] cycloaddition.^[1]





Crystallographic characterization



Displacement ellipsoids are shown at the 50% probability level. Selected bond lengths (Å) and angles (°): P(1)-N(1): 1.7093(19), P(1)-C(1): 1.729(2), C(1)-B(1): 1.648(4); N(1)-P(1)-C(1): 88.19(10). Displacement ellipsoids are shown at the 50% probability level. Selected bond lengths (Å) and angles (°): P(1)-N(1): 1.7070(9), P(1)-C(1): 1.7131(11), C(1)-B(1): 1.6458(15); N(1)-P(1)-C(1): 87.51(4).

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Coordination Chemistry



small satellites to the left and right of the singlet signal indicate complexation with tungsten

Comparison to known carbenes



Compounds (**3a/b**) fill the gap between the 3*H*-1,2,3,4triazaphospholenium salts (**1**) and the mesoionic 1,2,3triazolylidenes (**2**). ^[3] It can be described as a phosphorusderivative of the known tetrazolylidenes (**4**).^[4]

References:

Summary and Outlook

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Both compound classes **3a** and **3b** were clearly characterized by means of NMR spectroscopy, and the mesityl-substituted compounds were characterized by single-crystal X-ray diffraction. Studies on the coordination chemistry of these compounds have resulted in interesting preliminary results and require further in-depth investigations. Additional studies on the coordination of **3a/3b** with other Lewis acids and/or metals, similar to the known mesoionic carbene (**2**), are currently in progress.

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