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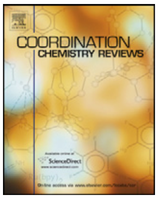

Addendum

Addendum to “Stable compounds containing heavier group 15 elements in the +1 oxidation state” by Ellis and Macdonald [Coord. Chem. Rev. 251 (2007) 936]

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Corrections:

In the description on page 937 of the metathesis reaction between PCl_3 and three equivalents of LiMe to yield PMe_3, the formal oxidation state changes should have read ($P^{III} \rightarrow P^{-III}$ and C^{-IV} to C^{-II}).

Additions:

A very useful paper regarding the concepts of valence, oxidation number and formal charges was published by Parkin during the publication of this review and is recommended reading for anyone interested in this subject [1,2].

The mechanism for the formation of salts containing triphosphenium cations, as described in Section 2.1, has been now been elucidated by Dillon and Monks [3] and a new and cleaner synthetic approach for the production of chloride and bromide salts of such cations through the use of a halogen scavenger has been reported by our group [4]. Furthermore, important work regarding the oxidation of triphosphenium salts, including the first structural data obtained by X-ray crystallography for alkylated derivatives, has now been reported [5,6].

The use of formal P^{I} sources for the remarkably clean and high-yield synthesis of unsaturated P^{III}-containing *N*-heterocyclic phosphenium cations analogous to *N*-heterocyclic carbenes has been studied experimentally and computationally [7,8].

We inadvertently neglected to include the important and enlightening computational work of Frison and Sevin on inversely polarized phosphaalkenes which supports the description of such species as carbene adducts of phosphinidenes, as outlined in Section 5.4 on page 970. Of particular import, the authors analyzed the electronic structures of the model compounds computed at the MP2, B3LYP, and CCSD(T) levels of theory using the electron localization function (ELF) demonstrate the presence of two “lone pairs” of electrons on the P atom [9,10]. The nature of the bonding and electronic structure of some of these phosphaalkenes, and other related molecules, was also analyzed using the natural bond orbital approach, charge decomposition analysis and ELF methods [11].

References

[1] B.D. Ellis, C.L.B. Macdonald, Coord. Chem. Rev. 251 (2007) 936.
[2] G. Parkin, J. Chem. Educ. 83 (2006) 791.
[3] K.B. Dillon, P.K. Monks, Dalton Trans. (2007) 1420.
[4] E.L. Norton, K.L.S. Szekely, J.W. Dube, P.G. Bomben, C.L.B. Macdonald, Inorg. Chem. 47 (2008) 1196.
[5] A.J. Boyall, K.B. Dillon, P.K. Monks, J.C. Potts, Heteroat. Chem. 18 (2007) 609.
[6] K.B. Dillon, A.E. Goeta, J.A.K. Howard, P.K. Monks, H.J. Shepherd, A.L. Thompson, Dalton Trans. (2008) 1144.
[7] G. Reeske, A.H. Cowley, Inorg. Chem. 46 (2007) 1426.
[8] B.D. Ellis, C.L.B. Macdonald, Inorg. Chim. Acta 360 (2007) 329.
[9] G. Frison, A. Sevin, J. Phys. Chem. A 103 (1999) 10998.
[10] G. Frison, A. Sevin, J. Organomet. Chem. 643 (2002) 105.
[11] G. Frison, A. Sevin, J. Chem. Soc. Perkin Trans. 2 (2002) 1692.

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