

Preface

I perceive that the success of the ongoing series “Topics in Heterocyclic Chemistry” being published by Springer Verlag, under the Editorship of Prof. R. R. Gupta (who unfortunately passed away suddenly last year) motivated the publisher and the then Chief Editor to publish two volumes on Phosphorous Heterocycles as part of this series. In view of the statement of a pioneer phosphorous chemist that *phosphorus is a carbon copy of carbon*, this decision appears to be quite logical and rational. In recent years, there have been many research publications emphasizing the analogy between the classical heterocycles and their phosphorus analogs. Nevertheless, the rainbow built by the compounds of phosphorus due to its diverse coordination states and geometrical architectures thereof in various compounds apparently encompasses more colors than that created by the carbon compounds. Furthermore, the possibility of using ^{31}P NMR spectroscopy, not only for the characterization of the phosphorous compounds but also for monitoring their chemical reactions, gives a sort of thrill in its own way and makes the life of the phosphorous chemist much easier.

The then Chief Editor, the late Prof. Gupta, invited me to shoulder this responsibility as a guest editor; I accepted the invitation, with initial hesitation due to my limited experience.

I have, however, been encouraged by the warm response received from colleagues working in different corners of world agreeing to contribute articles on a wide variety of topics pertaining to organophosphorus chemistry of current interest. I would like to take this opportunity to express my sincere thanks to these colleagues, with much appreciation for their generosity.

The articles – touching quite different aspects of organophosphorus chemistry – have been selected purposely to reflect, to some extent, the wide horizon of the subject.

The first article on anellated azaphospholes presents a brief account of their synthesis, structures, and reactions.

The second article deals with the biological activity of aminophosphonic acids.

The next article describes the use of 1,2-dihydrophosphinic oxides as intermediates for the synthesis of a variety of P-heterocycles.

The fourth article presents recent developments in synthetic aspects of spirophosphoranes having phosphorus in different coordination states.

The next article includes the description of the rich chemistry of phosphinines, including azaphosphinines.

The sixth article deals with synthetic approaches to different types of 1,2-heterophosphacyclanes, including four-, five-, and six-membered P-heterocycles.

The next two articles cover the chemistry of phosphorus containing macrocycles. The phosphorus containing calixarenes have attracted much attention in recent years due to their various functions such as metal cations binding, catalysis, molecular recognition, and bioactivity. Likewise, other phosphorus-containing macrocycles, cryptands, and dendrimers find various uses in analytical chemistry and biochemistry.

We hope to include the following articles in the second volume on phosphorous heterocycles:

Diazaphospholes

Selected phosphorous heterocycles containing a stereogenic phosphorus

Heterophenes carrying phosphorus functional groups as key structures

The synthesis and chemistry of the phospholane ring system

Synthesis and bioactivity of 2,5-dihydro-1,2-oxaphosphole-2-oxide derivatives

Recent developments in the chemistry of *N*-heterocyclic phosphines.

I would be failing in my duty if I do not express my sincere thanks to the people at Springer, particularly Ms. Birgit Kollmar-Thoni and Ms. Ingrid Samide, for coordinating the project with great dedication.

Jaipur, Spring 2009

Raj K. Bansal
Guest Editor

Phosphorous Heterocycles I

Bansal, R.K. (Ed.)

2009, X, 314 p. 77 illus., 1 illus. in color., Hardcover

ISBN: 978-3-642-00337-0