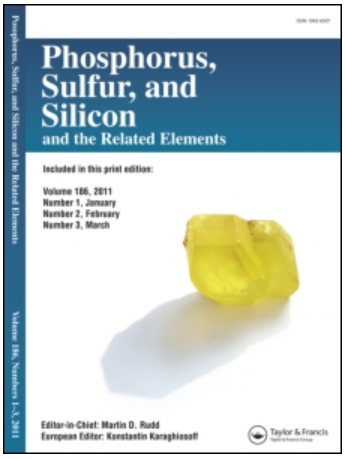

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The Chemistry of Organophosphorus Compounds, Vol. 3. Frank R. Hartley. John Wiley & Sons, 605 Third Avenue, New York, NY 10158. 1994. xvi 442 pp. 15 × 23 cm. $395.00. ISBN 0-471-930571

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Book Review

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This volume is part of a multi-volume work which has extensive coverage of organophosphorus compounds in four volumes: Volume 1 covers primary, secondary and tertiary phosphines (PR_3H_{3-n}, n = 1–3), polyphosphines (both P—(C)$_n$—P and R(P)$_n$R′, $n > 1$) and heterocyclic compounds containing phosphorus. Volume 2 covers phosphine oxides, sulphides, selenides and tellurides. Volume 3 covers phosphonium salts, phosphonium ylides and phosphoranes. Volume 4 will cover phosphinous, phosphonous, phosphinic and phosphonic acid compounds and their halogen derivatives R_2PY, RPY_2 and $R_2P(X)Y_2$, where Y = halogen and X = O, S, or Se. The coverage concentrates on the most important recent developments and mainly on material that has not been adequately covered by reviews or other secondary sources and is presented at a fairly advanced postgraduate level.

The contents of the present volume contain the following seven chapters:

1. Structure and bonding in phosphonium ylides, salts and phosphoranes (D. G. Gilheany) (44 pp, 308 refs.).
2. Preparation, properties and reactions of phosphonium salts (H.-J. Cristau and F. Plénat) (140 pp, 910 refs.).
3. Preparation, properties and reactions of phosphoranes (R. Burgada and R. Setton) (88 pp, 363 refs.).
4. Structure, bonding and spectroscopic properties of phosphonium ylides (S. M. Bachrach and C. I. Nitsche) (30 pp, 95 refs.).
5. Electrochemistry of ylides, phosphoranes and phosphonium salts (K. S. V. Santhanam) (22 pp, 58 refs.).
6. Photochemistry of phosphonium salts, phosphoranes and ylides (M. Dankowski) (22 pp, 121 refs.).
7. Chemical analysis of organophosphorus compounds (H. Feilchenfeld) (44 pp, 403 refs.).

As seen from the chapter headings, several of the topics are treated by different authors. These are presented from different points of view and provide for a comprehensive overview. In terms of the number of references cited per page, Chapters 1, 2, and 7 have the highest, ranging between 6.5 and 9, whereas the other chapters range between 2.5 and 5.5 references cited per page. The variation is partly related to the way each author has presented his material. For example, the chapter by Gilheany contains a number of tables that have summarized a lot of useful results from structural and theoretical treatments, whereas the chapter by Burgada and Setton emphasizes synthetic methods and the picturing of structural formulas.

Overall this volume is an excellent one for its coverage and contains a wealth of information at the forefront of this highly interesting area of research.

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