

PREFACE

This volume presents and evaluates solubility data for the orthophosphates of lithium, sodium, potassium, rubidium and cesium. There are two exceptions to this: (a) data are presented for the solubility of sodium metaphosphate in water (1) on page 46 in chapter 3; and (b) solubility values for the $\text{NH}_3\text{-K}_2\text{O-H}_3\text{PO}_4\text{-H}_4\text{P}_2\text{O}_7\text{-H}_2\text{O}$ system (2) are given on pp. 269-270 in chapter 8. Neither of these systems is evaluated because no other comparable data are given in this volume, nor, especially in the latter case, have any similar data been reported.

The orthophosphates have been known and used for many years, but interest in these substances has varied according to their use as, e.g., for fertilizers, corrosion inhibitors and piezoelectricity.

So far as we are aware, all the relevant articles dealing with the alkali metal orthophosphates as a solid phase and published up to 1984 have been reviewed.

Chemical Abstracts was used to search for relevant articles published in the years 1920-84. The following three sources were used to locate articles published prior to 1920.

1. The 1928 edition of Gmelin's *Handbuch der Anorganischen Chemie*.
2. References cited in the articles that have been reviewed.
3. The review article of Wendrow and Kobe (3).

The various systems are treated in the order in which the alkali metals are listed in Group I of the Periodic Table. Most of the available solubility data are for the orthophosphates of sodium and potassium, and for these two systems an introductory chapter on the $\text{MOH-H}_3\text{PO}_4\text{-H}_2\text{O}$ ($\text{M} = \text{Na}$ or K) system is given. Each of these chapters (chapters 2 and 7) also refers to compounds to be considered in later chapters. Following each of these introductory chapters there are chapters dealing with the solubility data for individual orthophosphates having different M/P ratios, and the ternary and multicomponent systems in which these orthophosphates are components. Only one chapter is devoted to each of the orthophosphates of lithium, rubidium and cesium.

A considerable amount of help was given to us in the preparation of this volume, and we wish to acknowledge this help and express our thanks to those who provided it. Dr. Mark Salomon kindly coordinated the work of the editors. Dr. Kurt Loening of Chemical Abstracts Service gave indispensable help by providing copies of articles that were difficult for us to locate, and supplying also the CAS Registry Numbers for many of the substances mentioned in this volume. Drs. G. Bohnsack, J.W. Lorimer, and H. Miyamoto provided us with copies of some of the articles reviewed in this volume. Sue Sweetman, in her patient and efficient way, typed the entire manuscript.

We also wish to thank the institutions with which we are affiliated for assistance in many ways during the work of this project. And one of us (J.E.) wishes to express special thanks to IUPAC Commission V.8 and to USSR Minister of Education Academician Prof. G.A. Yagodin for their help in making arrangements for her to spend some time in Moscow in 1984 to search the literature there for many of the articles that have been compiled in this volume. She also wishes to thank Prof. Dr. M. Ebert, Head of the Department of Inorganic Chemistry at Charles University of Prague for making her participation in this project possible and for providing good conditions in which to carry out this work.

References

1. Morey, G.W. *J. Am. Chem. Soc.* 1953, *75*, 5794.
2. Frazier, A.W.; Dillard, E.F.; Thrasher, R.D.; Waerstad, K.R. *J. Agr. Food Chem.* 1973, *21*, 700.
3. Wendrow, B.; Kobe, K.A. *Chem. Rev.* 1954, *54*, 891.

Jitka Eysseltová
Charles University
Prague, Czechoslovakia

Theford P. Dirkse
Calvin College
Grand Rapids, Michigan USA