Book Review

F. TAMÁS and I. PÁL: *Phase Equilibria Spatial Diagrams*

Publishing House of the Hungarian Academy of Sciences, Budapest and Iliffe/ Butterworth, London, 1970. 234 pages, 80 insets.

This book deals with the laws of melting and freezing: the elements of equilibrium phase diagram and the combination of the elements in the case of binary, ternary and quaternary systems are treated from the geometrical point of view. A knowledge of these laws is very important for the inorganic and organic chemist, metallurgist, mineralogist and ceramist, but in spite of this, the geometry of phase diagrams is not instructed with due emphasis in our technical universities. The reason for this is that binary phase diagrams, which are quite simple to handle, provide only rough approximations, whereas ternary and quaternary phase diagrams, which are of much higher informative value, are not simple plane but spatial diagrams the structure and geometry of which can be studied by means of spatial models. Models projected onto a plane are rather "frightening" due to multiple overlapping. These difficulties are overcome in this book in an original way by means of 80 anaglyph insets.

The anaglyphs printed in red and green give a suprisingly life-like spatial effect when viewed through the red-green glasses enclosed with the book. The structure of ternary and multicomponent phase diagrams can readily be studied by means of these spatial diagrams; hence they can conveniently be used in teaching and even provide novelty for the specialist of phase diagrams. One can demarcate spatial elements or separate layer-elements and so on, by means of a pencil.

The text of the book is very concise but very clear and understandable. The modern application of some terms is worth mentioning. Although a number of these are not yet internationally accepted they help the reader in understanding the essence (e.g. the term "solindex" instead of solidus in the case when the curve reflects not only the lowest temperature of melting of the system but also the composition of the solid phase as e.g. in the case of the cigar-like curves of completely miscible systems; or the term "tetrahedroid" for non-regular tetrahedron). The use of these terms can be permitted, the more so since the exact definitions are given in footnotes when the terms first occur in the book.

The topic of the book is precisely circumscribed, only the phenomena of melting (and its opposite: crystallization from melts) being treated; solid phase transformations, which are of importance for thermal analysts, are omitted as are eutectoid and peritectoid reactions, etc. A brief survey of these and the treatment of equilibria in solution governed by the same laws may have been useful.

The book can be warmly recommended to those wishing to obtain a more detailed knowledge of the geometry of phase equilibrium diagrams and of the interpretation of the physicochemical phenomena by the diagrams. Altough the experimental methods of the determination of phase diagrams are not dealt with in the book, it calls attention to the peculiarities of the thermal methods of their determination and to the importance of the interpretation of thermal data primarily in the course of determining some complicated diagrams. On this basis the book can be considered a useful handbook in the teaching of thermal methods of analysis at the university level, and a valuable collection applicable to the evaluation of laboratory and literature data.

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