

alkali halides. A separate chapter deals with the important phenomenon of strain hardening in various metal alloys and in nonmetals. Another very well-illustrated chapter deals with slip lines and other surface phenomena as related to the internal processes. Theory of plasticity is discussed in the next chapter which covers nearly 60 pages. Here the various models of critical shear strength, of strain hardening, etc., are discussed. In particular, the role of the Lomer-Cottrell dislocations is stressed. The reviewer found this section particularly valuable since it introduces order into the maze of various semiquantitative models and theories recently proposed. A discussion of plastic properties of alloys and of recovery, polygonization, and recrystallization, as well as creep, closes the article. There are numerous and up-to-date references.

A short article by Dehlinger, only slightly over 40 pages, is devoted to phase transformations in solids. It is a pity that a summary of this rich and interesting field had to be compressed that much. For instance, very little space is devoted to the extremely basic preprecipitation phenomena; similarly the order-disorder transformations and other transformations, which may not be simple phase changes, are disposed of on one page only. On the other hand, the classical first-order phase transitions are treated in more detail. The first chapter deals with the mechanism of nucleation, describing the usual models of Volmer, Becker, and others, and discusses the resulting kinetics. In the next chapter are covered the kinetics of various special reactions such as precipitation and age hardening, x-ray and microscopic evidence, associated magnetic phenomena, thermodynamics of precipitation, and the mechanism and rates of age hardening. In the final chapters are discussed the diffusionless transformations such as the polymorphism of cobalt, the martensitic reaction, the resulting orientation relationships, the strain energy, and the rate of the martensitic transformation. An inclusion of an up-to-date table of the observed orientation relationships in the various diffusionless transformations is most valuable. A rather complete reference list helps to guide the reader into those fields which are only briefly treated.

While the present volume is written in German, the excellent English subject index and the richness of illustrations and diagrams should make the book of value even to those who are shaky in reading foreign languages.

Books Received

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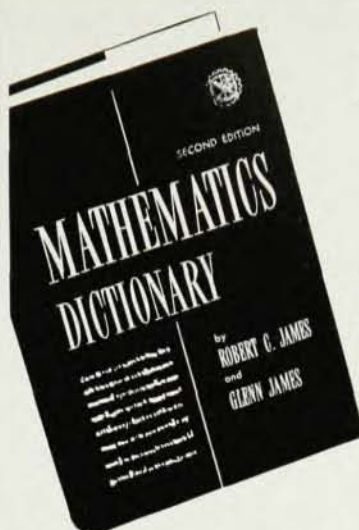
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