

Press 1970), essentially in the present form. With 475 references up to 1986, the new presentation is excellently documented and completely covers the field of crystal growth in gels.

The first chapter gives a review of the early work on the growth of crystals in gels, and introduces the basic growth procedures, in which the gel is in contact with either one reagent reservoir or two separate reagent reservoirs. The operation of the techniques is instructively explained with examples of their application to various materials. Doping possibilities and difficulties that may be encountered are discussed for the first time in this book.

The second chapter deals with the preparation and properties of various gels. Their formation, structure, handling and properties, such as density and porosity, are described in great detail for silica hydrogels. A new contribution deals with the one-dimensional diffusion of one or two counter-diffusing reagents in gels. The diffusion is investigated by numerical method as a function of position and time. According to the two basic growth systems, solutions are determined for gels of finite and semi-infinite lengths with a single diffusant, and for finite gels with two species having equal diffusion coefficients. Constant or time-dependent concentrations are prescribed at the boundaries. Unfortunately the initial distributions are not mentioned.

The influence of reagent distribution on growth rate and crystal perfection is investigated in the third chapter. Growth models of crystals and the importance of diffusive transport are discussed. In addition, sophisticated growth methods and special treatments of growth systems such as reimplantation of crystals are described. In the fourth chapter nucleation and crystal growth are treated by the usual phenomenological theory and illustrated with experimental examples.

The last chapter presents the history of Liesegang rings, numerous instructive examples of Liesegang structures, and many numerical solutions on the formation and spreading of particular precipitation structures for the two basic growth systems. For the calculations the author considers diffusive transport, and assumes two conditions for precipitation, i.e., that the local concentration of the reacting species is nearly uniform, and that the reaction product concentration exceeds a critical value. The detailed presentation of numerical results for various parameters are very helpful in understanding the complex physical and chemical processes in gels. The interesting software used by the author is available for IBM-compatible personal computers. The chapter ends with two reference lists of crystals grown in gels and of growth rate measurements.

From this book the interested crystal grower can find much useful advice on the procedures of crystal growth in gels. In addition it provides the reader with simple theoretical models which are useful in understanding the basic processes such as diffusion, nucleation and crystal growth in gels. The book is easily readable and gives a full and

up-to-date coverage of the literature. It will be of great interest to scientists who are involved in crystal growth or materials syntheses.

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## **Polymer Science in the Next Decade, an International Symposium Honoring Hermann F. Mark on his 90th Birthday.**

Edited by *O. Vogl* and *E. W. Immergut*. Wiley, Chichester 1987. x, 284 pp., paperback, £ 90.00.—ISBN 0-471-63239-2

The above book contains the proceedings of the symposium "Polymer Science in the Next Decade", which was held in New York in 1985 to honor *Hermann F. Mark*. Subdivided into four sections, it consists of a series of short reviews on a wide variety of subjects relating to contemporary polymer science. At first one might be inclined towards the view that this is one of the numerous books put together after a symposium without much editing, and hence of rather limited use. However, closer inspection reveals that the present book is indeed an interesting contribution to the literature of polymer science. First of all, the man being honored is *Hermann F. Mark*, who can certainly be counted among the great scientists of this century. Born in 1895, he has contributed greatly to physical chemistry and to polymer science. He still continues a very active schedule of travelling and lecturing around the world. So it seems rather appropriate that on the occasion of his 90th birthday a symposium on opportunities and future trends in polymer science has taken place.

The list of speakers includes renowned names such as *Paul Flory* and *Linus Pauling*. The multitude of topics reflects modern polymeric science in a very lively fashion. The short articles are useful for gaining a first insight into the present status of certain fields. Noteworthy is the contribution of *M. F. Perutz* on the design and engineering of proteins. Another well-written review by *Katchalski-Katzir, Wilchek* and *Patchornik* deals with chemically active and biologically specific polymers. An article of particular interest by *F. R. Eirich* gives a very personal view on macromolecules and evolution. A number of other reviews are much shorter, but still quite useful to get an idea of present trends in polymer science. In addition to these purely scientific reviews, the book contains many personal recollections concerning *H. F. Mark* and the early days of polymer science. Both the scientific part and the more personal statements are useful for anyone who wants an overview of contemporary polymer science and how it came into being. Thus, the book is certainly recommended for libraries of departments of chemistry and biology.

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