

**Rubberlike Elasticity—A Molecular Primer.** By *J. E. Mark* and *B. Erman*. Wiley, Chichester 1988. viii, 196 pp., bound, £ 23.70.—ISBN 0-471-61499-8

This book is written by two former coworkers of the late *P. J. Flory*, and both of them are very active and highly esteemed scientists in the field of polymer networks. One of them (*J. E. Mark*) has developed new synthetic concepts for 20 years to obtain cross-linked materials with new and unconventional properties, the other (*B. Erman*) has specialized in problems concerning the theoretical description of rubber-like elasticity. However this book is not designed for experts in the area. Its approach is more that of an introductory course for chemists or engineers who wish to be confronted with the fundamental aspects of rubber-like elasticity and its molecular origin.

The first part of the book can be understood if the reader is familiar with some basic concepts of physical chemistry. Here, some rubber-like materials are presented and typical problems concerning network structure and routes of preparation are discussed. The basic theoretical concepts are presented without claiming completeness. Most of the logical steps are accompanied by references which simplify a reworking for readers with deeper interests. At the end of the first part, the dependence of the elastic force on deformation, temperature and structure is presented by means of typical examples of the authors' work. By reading through these chapters one becomes familiar with strain experiments and their physical meaning.

The purpose of part B of the book is completely different. Here, the authors wish to confront modern topics of network research, both new synthetic concepts and new methods for

the characterization of network properties. This is very hard to realize, especially in a compressed and popular form, and consequently some of the chapters presented are fragmentary, (e.g. the treatment of neutron scattering experiments on networks) and a couple of modern developments are missing completely. However, the presentation of the authors' recent work in this area, for instance the treatise of bimodal networks and filled elastomers is convincing. Hence it should be regarded as a very personal point of view of the future of cross-linked materials.

However, in my opinion a good opportunity to give more detailed information to a readership with deeper interests has been missed. The later chapters are unbalanced in proportion, and their title "additional topics" may be misunderstood as an unstructured enumeration of sometimes very impressive, but sometimes not worked out, concepts. The textbook character of the first part should not be transferred to the second part. The very personal view-point of "modern topics" must be underlined, and with this understanding one can even enjoy some of the exceptionally elegant ideas which are presented. It is up to the readers with broader interests to complete their information with other publications.

In my opinion the book is not the missing textbook on polymer networks but it is a brief and stimulating introduction to this area of polymer materials. It can be recommended to all scientists who wish to learn something about networks without the necessity of a detailed discourse on special problems in research.

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