

PREFACE

The papers in this and the previous issue (*Polym. Eng. Sci.*, Vol. 27, No. 1, Mid-January 1987) are from the more than 40 papers presented in the International Symposium on Nonlinear Deformation, Fracture and Fatigue of Polymeric Materials in Chicago during the National Meeting of the American Chemical Society in September, 1985. The Symposium was an attempt to bring together a broad spectrum of scientists and engineers interested in the phenomenology of the various modes of deformation in polymeric materials. Contributions included those from theoretical condensed matter physicists to mechanical engineers.

The need for such an interdisciplinary effort has been evident for some time. Ideally, one would like to be able to understand deformation mechanisms well enough to generate microscopic theories that model the phenomena well. And, if the theories are useful, they should provide additional physical insight into the mechanisms as well as make reasonable predictions into the behavior in experimentally inaccessible regimes. To do so would require carefully designed experiments and precise information. At the macroscopic end of the spectrum, one would like to have constitutive equations and failure criteria to predict the deformation behavior of structures in complex modes of loading. Here again, precise information, though of a macroscopic nature, would be needed. The papers in this volume represent many such efforts. During the Symposium these papers generated much interdisciplinary discussion. We hope that the publication of these papers will continue to have such an effect on the readers.

We wish to thank the Divisions of Polymer Chemistry and Polymeric Materials: Science and Engineering of the American Chemical Society for co-sponsoring the Symposium, and the Petroleum Research Fund for providing travel grants to several foreign participants to the Symposium. Finally, the continued encouragement and help from Professor Roger S. Porter, the Editor of this Journal, is much appreciated.

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