

Macro Group UK this is perhaps not an essential section.

Over half the yearbook is devoted to six review articles, including three very welcome contributions from the USSR. D. C. Sherrington describes the rapidly expanding field of polymeric reagents, polymeric protecting groups and polymer-supported catalysts. V. V. Korshak and A. L. Rusanov review the latest developments in the chemistry of polyheteroarylenes. The thermal degradation of polymer/additive systems is discussed in an article by I. C. McNeil; this theme is continued in a review of the kinetics of the degradation of polymers by G. E. Zaikov. Recent developments in the study of the effects of electric and magnetic fields on structural transformations in liquid crystal polymers are reviewed by N. A. Platte, R. V. Talroze and V. P. Shibaev. Finally, D. Durand compares the different theoretical approaches to polymer network formation and discusses those aspects which help in the understanding of the gelation process.

Polymer Yearbook 3 has found a permanent place on my desk (at least until the next edition!) and it should appeal to a very wide range of polymer scientists.

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## **Polyvinyl Chloride Degradation**

**Jerzy Wypych**

Elsevier Science Publishers,  
Amsterdam, 1985, x + 264  
pages, US\$73.25,  
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My first impressions were extremely critical, in feeling that another publication on polyvinyl chloride degradation or thermal stability was surely unjustified. There can be few polymer scientists who have not at some stage or other attempted to unravel the mechanism of dehydrochlorination, or the action of stabilizers, on PVC as exemplified by the copious literature on a problem which dates back to the 1930s. Nevertheless, I have to confess to being impressed with the way the author has succeeded in developing his subject, and to admit that this is a major contribution to a difficult topic.

The subject matter is well developed:

Chapter 1 deals with the chemistry, molecular structure and morphology of PVC, with particular reference to defect structures as sources of weak links, and initiation sites;

Chapter 2, the kinetics of the dehydrochlorination reaction, the initial stages, and the effect of evolved products, unsaturation and presence of oxygen;

Chapter 3, other degradation procedures induced photochemically, by irradiation and by chemicals, and compares and contrasts the mechanism of dehydrochlorination involved;

Chapter 4, the mechanisms of stabilization and the nature of synergism;

Chapter 5, the effect of diffusion of volatiles, and the effect of molecular dynamics and microstructure on the rate of volatile evolution.

This is a most stimulating chapter and suggests that more could be done in determining effect of morphology, amorphous/crystalline ratios and diffusion rate measurements in understanding the mechanisms.

Chapter 6 is particularly useful in summarizing the analytical techniques that have been adopted in thermal degradation studies on PVC, and the effect of chemical modification.

In conclusion, the monograph is thoroughly recommended. It deals with the subject matter differently from any other and is refreshingly novel. It is clearly aimed at the specialist, but most chapters could be read by students of polymer science.

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