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Photoreactions of Polymers—Mechanisms and Applications

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ABSTRACTS

PHOTOREACTIONS OF POLYMERS— MECHANISMS AND APPLICATIONS

GERHARD REINISCH

Photoreactions of polymers are technically used for crosslinking and for production of graft polymers. Information storage processes are based on laser-induced rearrangements of liquid crystal polymers. For a long period, the objective of polymer research was to suppress aging processes caused by sunlight in polymeric materials.

The well-aimed and fast photodegradation of polymers within strictly limited geometrical areas is one of the current active applications of polymer photoreactions. These processes are used in microelectronic technology as the first step in structuring doped silicon wafers down to the submicrometer range. Syntheses and degradation reactions of polymers for this application are presented, and the optical and topochemical *conditions* for the microstructuring are discussed.

In order to degrade polymer sheets which cannot be recycled, photochemical decomposition reactions were taken into consideration as much as two decades ago. Extensive synthesis and degradation tests have been carried out by J. Guillet [1], and they are summarized in this paper. Newer approaches for practical application of photodegradation of waste sheet material are based on the addition of activating complex compounds.

REFERENCE

- [1] J. Guillet, *Polymer Photophysics and Photochemistry*, Cambridge University Press, 1985.