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Polymerization of Lactams

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with interesting properties. The chain architecture can be controlled first by a stepwise building of the individual segments (telechelics of regular constitution and uniform length), which are linked in a subsequent polyreaction to yield the multiblock copolymer. The differences in the chemical structure of the segments result in multiphase polymer systems, and the supermolecular structure can be influenced by both the segment length distribution and the variation of specific constitutive units in the segments. The effects of the variation on the chain architecture on the superstructure and thus the material properties are discussed with the example of segmented polyurethane elastomers with tailored primarily structure.

POLYMERIZATION OF LACTAMS

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The interesting results of the study of lactam polymerization (2-pyrrolidone, ϵ-caprolactam, η-capryloctam) at the Department of Polymers of the Prague Institute of Chemical Technology are presented.

With regard to the anionic polymerization of 2-pyrolidone, the scheme of fundamental steps is summarized and unexpected results are discussed: (a) thermal degradation of poly(2-pyrrolidone), (b) influence of transient cooling of polymerization mixture on the course of polymerization, and (c) polymerization accelerated with *N*-iminolactam.

In the case of anionic polymerization of ϵ-capralactam, the industrial application of continuous anionic polymerization is mentioned. The aim of the synthesis of block copolymers of polyamides is to improve the toughness of material. The results of preparation of poly(ϵ-caprolactam)-polybutadiene block copolymers and their mechanical properties illustrate the possibilities of the described method.

Autopolymerization of η-caprylolactam is an example of noncatalyzed polymerization of lactams; the mechanism is discussed.