

Copolymids with different microstructure of the chain containing moieties of bifunctional monomers and AB monomer: synthesis and properties

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Abstract

Using the method of high-temperature catalytic copolycondensation in "active" solvent - molten benzoic acid at 140°C [1], copolyimides (CPIs) of the same chemical composition but different chain microstructure were synthesized via scheme (A2+B2+AB): diblock CPI [(A2B2)n-(AB)m], multiblock CPI [(A2B2)n-(AB)m]q, and regular CPI [A2(AB)B2(AB)]. Here A2, B2 are dianhydride and diamine, AB - heteromonomer. The multiblock and diblock CPIs were synthesized at different order of monomers loading. Regular CPI was obtained by polycyclocondensation of B2 with presynthesized imide-containing dianhydride [(AB)A2(AB)]. As AB monomer, 4-(3-aminophenoxy) phthalic acid (APPA) was used [2]. 3,3',4,4'-Diphenyltetracarboxylic acid dianhydride and 9,9-bis(aminophenyl)fluorene were used as A2 and B2 monomers. correspondingly. The microstructure of the CPI chain was determined by the high-resolution C13 NMR spectroscopy. The assignment of signals was made by comparing CPI signals with those of corresponding homo polymers. The influence of the chain microstructure on the ability to transition to viscous state has been studied by the method of thermomechanical analysis. The most interesting properties (a combination of thermoplasticity and high glass transition temperature) were demonstrated by regular copolymer.

Biography:

Dr. Anna Yu. Tsegelskaya has a Ph. D. of polymer chemistry from Enikolopov Institute of synthetic polymer materials, Russian Academy of Sciences (ISPM RAS, Moscow, Russian Federation). Her specialty is synthesis of polyimides and other high performance polymers. She has published over 30 papers in indexed international scientific journals and made over 50 presentations and posters at national and international scientific conferences

Speaker Publications:

- Kuznetsov A. One-pot polyimide synthesis in carboxylic acid medium. High Performance Polymer. 2000; 12:445-460. DOI:10.1088/0954-0083/12/3/307
- Buzin P, Yablokova M, Kuznetsov A, Smirnov A, Abramov I. New AB polyetherimides obtained by direct polycyclocondensation of aminophenoxy phthalic acids. High Performance Polymers. 2004; 16:505-514. DOI: 10.1177/0954008304039991

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