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Synthesis of star-shaped oligoimides in catalytic medium by the scheme Bn+AB

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Abstract

In present work, for the first time star-shaped oligoimides (SOI)s were obtained by the scheme Bn+AB, where Bn are multifunctional amines (n=3 or 4) and AB is 3-aminophenoxy phthalic acid (APPA). To obtain the SOI, we used the original method of high temperature catalytic polycondensation in a melt of benzoic acid [1]. The method has a lot of advantages in comparison with traditional methods of polyimide synthesis including one-pot process, mild conditions, high rate, low sensitivity to chemical structure of diamines, etc. Under reaction conditions, APPA acts as a bifunctional AB-monomer [2]. To obtain SOI, APPA was loaded slowly into the reaction system containing Bn. All the star-shaped oligoimides synthesized were characterized by the methods of GPC, 1H NMR, DSC, FTIR. It was demonstrated that the length of the star arms can be varied by changing the AB: Bn molar ratio. All the obtained SOI have a narrow molecular weight distribution (1.1-1.6). The presence of terminal amino groups in SOIs was confirmed in a course of the polymer-analogous transformations of SOIs.

Biography:

A. Soldatova is a junior researcher of Enikolopov Institute of Synthetic Polymeric Materials Russian Academy of Sciences (ISPM RAS, Moscow, Russian Federation). She works in field high performance polymers. Area of interest uncludes polyamide-imides and polyimides having branched topology. At the moment, she has published 4 papers in indexed international scientific journals and made over 10 presentations and posters at national and international scientific conferences.

Speaker Publications:

1. 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

2. 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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