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Extended Abstract

Nanofibers Based on Thermoplastic Elastomers and Isofural †

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† Presented at the 16th International Symposium "Priorities of Chemistry for a Sustainable Development" PRIOCHEM, Bucharest, Romania, 28–30 October 2020.

Published: 16 November 2020

Keywords: nanofibers; isofural; thermoplastic elastomers; antibacterial; electrospinning

The study aim was the synthesis and characterization by thermal and structural properties of nanofibers, obtained by electrospinning using styrene-butadiene block-copolymers (SBS) and styrene-isoprene block-copolymers (SIS), as well as their composites with isofural [1].

In the first step, styrene-butadiene block-copolymers (SBS) and styrene-isoprene block-copolymers (SBS) were obtained by anionic sequential polymerization. The reactions were carried out in cyclohexane solution through a three-stage process and were initiated with n-butyl lithium. In the second step, polymer composites with antibacterial properties were obtained, using the synthetized thermoplastic elastomers and isofural in tetrahydrofuran solution [2].

The polymeric composites with antibacterial properties obtained from thermoplastic elastomers and isofural were used for the manufacture of nanofibers by electrospinning (Figures 1 and 2).

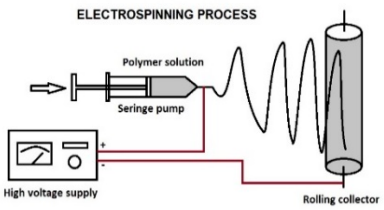

Figure 1. Schematic representation of electrospinning process.

Figure 2. Electrospinning equipment.

The polymer nanofibers manufactured by electrospinning [3] were characterized by ATR-FTIR analysis, Differential Scanning Calorimetry (DSC), and Thermo-gravimetric Analysis (TGA).

The results indicated that the nanofibers obtained from composites of thermoplastic elastomers and isofural have a corresponding thermal stability. The thermal decomposition started after 330 °C in the case of SBS and after 300 °C in the case of SIS.

Acknowledgments: This paper was supported by a Nucleu Program, project no. PN.19.23.03.01, contract no. 23N/2019.

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