Extended Abstract

Polymeric Nanofibers Manufactured by Electrospinning of Styrene-Ethylene-Butylene-Styrene (SEBS) Composites [†]

Bogdan Spurcaci¹, Lorena Iancu^{1,2,*}, Mircea Filipescu¹, Rodica-Mariana Ion^{1,2}, Paul Ghioca¹, Ramona Grigorescu¹, Cristian Nicolae¹, Raluca Gabor¹, Maria Rapa³ and Ecaterina Matei³

¹ The National Institute of Research and Development for Chemistry and Petrochemistry ICECHIM Bucharest, 202 Spl. Independentei, 6th District, Bucharest 060021, Romania; bogdansssss@hotmail.com (B.S.); mfilipescu3@gmail.com (M.F.); rodica_ion2000@yahoo.co.uk (R.-M.I.); pghioca@yahoo.com (P.G.); rmgrigorescu@gmail.com (R.G.); ca_nicolae@yahoo.com (C.N.); raluca_gabor@yahoo.com (R.G.)

² Valahia University, Doctoral School of Materials Engineering Department, 13 Aleea Sinaia, Targoviste 130004, Romania

³ University POLITEHNICA of Bucharest, Center for Research and Eco—Metallurgical Expertise, 313 Spl. Independentei, Bucharest 060042, Romania; rapa_m2002@yahoo.com (M.R.); ecaterinamatei@yahoo.com (E.M.)

* Correspondence: lorena.iancu@icechim.ro

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The study aimed to synthesize nanofibers based on styrene-ethylene-butylene-styrene block-copolymers (SEBS) [1] and its composite derivatives, through the electrospinning (Figure 1) process [2]. Styrene-ethylene-butylene-styrene (SEBS) 1652 manufactured by Kraton was used as the basic polymer. This is a translucent thermoplastic elastomer, with a linear structure of triblock copolymer based on styrene and ethylene/butylene (SEBS), and with a Styrene/Rubber ratio of 30/70. Polymeric composites were synthesized in toluene solution, using SEBS and graphene at a gravimetric ratio of 80/20 and 90/10.

Figure 1. Electrospinning process scheme.

The composite materials based on SEBS and graphene, with a concentration of 20% polymer in toluene were used for the manufacture of nanofibers by electrospinning (Figure 2).

Figure 2. Electrospinnig equipment.

Nanofibers manufactured based on SEBS and SEBS with graphene composites were investigated by structural, thermal and chemical properties. The nanofibers based on SEBS and graphene obtained by electrospinning were characterized by ATR-FTIR analysis, Differential Scanning Calorimetry (DSC), Thermo-gravimetric Analysis (TGA) and Scanning Electron Microscopy (SEM). The results indicated an improvement of thermal and chemical properties of nanofibers composites based on SEBS and graphene, compared to SEBS 1652 elastomer.

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