عنوان مقاله:

Synthesis of Carbon Fibers via Electrospinning Approach and the Effect of Critical Flow Rate on the Morphology of Fibers

محل انتشار:

نهمین کنفرانس و نمایشگاه بین المللی مهندسی مواد و متالورژی ایران و چهاردهمین همایش ملی مشترک انجمن مهندسی متالورژی و مواد ایران و انجمن ریخته گری ایران (سال: 1399)

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خلاصه مقاله:

In this work, carbon fibers have been successfully synthesized using the electrospinning approach, followed by the stabilization and carbonization heat-treatment. Polyacrylonitrile (PAN) has been used as a source of the polymer. Parameters of electrospinning were optimized, including the feeding rate 0.3 (ml/h), applied voltage 4 (kV), the distance between collector and needle 10 (cm) to obtain homogenous and bead-free fibers. Then, the products were characterized by using XRD, SEM, and FESEM analysis. The effect of critical flow rate on the formation of bead-free and homogenous fibers investigated. Obtained results indicated that increasing the flow rate beyond the critical value gives rise to the emerging bead structure of the fibers. The X-ray diffraction pattern confirmed the presence of carbon structure after the stabilization and carbonization heat-treatment process.

کلمات کلیدی:

Electrospinning, Polyacrylonitrile, Flow Rate, Carbon fibers