

Polymer fibers produced by electrospinning technique

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Electrospinning technique is a very simple method for producing polymer fibers with nano and micrometric diameters. The process is scalable, flexible and low-cost because does not require complicated devices or high temperatures. Thus, fine polymers' fibers are drawn from solutions by applying a high electric field. These polymer fibers can be further functionalized using nanoparticles' addition or further chemical or electrochemical deposition of various compounds on the surface of the electrospun nanofibers [1-3]. Functionalized meshes of nanofibers obtained by the electrospinning technique have been successfully used as thermochromic, magnetochromic, and electroluminescent devices. Such nanofibers were prove to be able to mimic the human muscles' movements [4, 5].

Morphology control is allowed by the possibility of controlling all the process parameters (temperature, viscosity of polymeric solution, applied voltage, distance between electrodes, etc.). Electrospun polymeric nanofibers have multiple applications in medicine but they also permit manipulation of light at nanometric dimensions when doped with organic dyes or different nanoparticles. Dye doped polymers were studied in details, from the point of view of the emission tuning with morphology and with composition [6-9].

We present our studies regarding the tuning of the properties of polymer nanofibers produced by electrospinning. Our main objective was to produce functionalized polymer nanofibers by addition of different compounds and determine their structural, morphological and optical properties.

Keywords: *polymer fibers, electrospinning, nanofibers, structural properties, optical properties.*

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Not applicable.

Conflicts of Interest

The authors declare no conflict of interest.

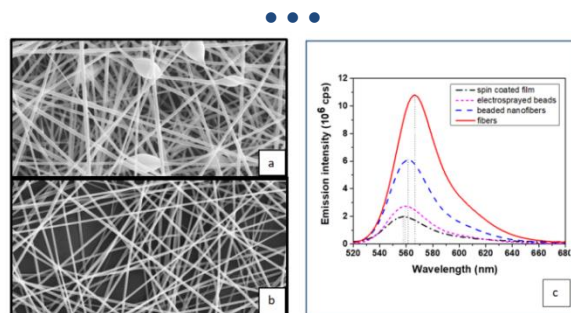


Figure 1. SEM images of beaded fibers (a) and smooth fibers (b) produced by the electrospinning. (c) Emission spectra of samples prepared with different process parameters [6].

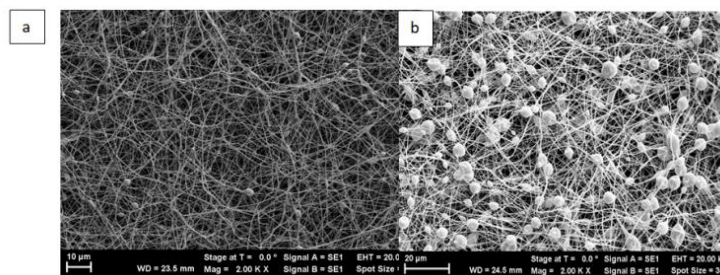


Figure 2. SEM images of nanofibers obtained by the electrospinning technique from polymer solutions doped with different dyes, Rhodamine 6G (a) and Coumarin 6 (b).

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