

ANNUAL PHARMA PRICING & MARKETING CONGRESS

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International Conference on NANOSCIENCE AND TECHNOLOGY

September 24-25, 2018
Dubai, UAE

Chemical modification of polyethylene terephthalate nanofibers by aminated with ethylenediamine

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Polyethylene terephthalate (PET) is semi-crystalline polyester, which is formed from ester monomers by condensation polymerization reaction. PET becomes the most common polyester for food and liquid packaging. In the last decade, electrospinning technique has been acknowledged as an effective way for the formation of nanofibers. Spun nanofibers offer several characteristics such as extremely high surface to volume ratio, high porosity, and small pore size interconnection. Aminolysis has many applications; Aminolysis of polyester is considered as a nucleophilic reaction between amine and ester bonds of polymer chain. For using west PET to treat wastewater

from heavy metals, it is necessary to modify by introducing with functional groups on the surface. Polyethylene terephthalate fibers (PETFs) were modified by grafting amine group on the surface of nanofibers mat by ethylene diamine(EDA) in two different concentrations (1.5% and 2.5%) in ethanol at different times (2,5,8,10and 15 min) with fixed temperature. Staining nanofibers with acid fuchsin dye used to investigate the amount of amine group that has been grafted by aminolysis. The concentration (1.5%) with shorter contact time (5 min.) at 40 C° is resulted in a more efficient aminolysis process.

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