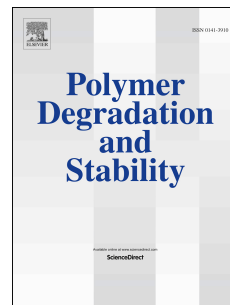


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A solvent degradation approach to expose nanoparticles by decreasing nanofibers' diameter

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Abstract:

This paper reports an effective method to reduce nanofibers' diameter of functionalized TiO₂/Nylon 6-6 nanofibers, by dissolving polymer layers through formic acid solutions, to improve incorporated nanoparticles' adsorption efficiency. In order to investigate the effects of floatation in 2, 3 and 4 M formic acid solutions for different periods (A.R.F) on the nanofibers' diameter and nanoparticles' exposure, Cu²⁺ adsorption was applied. Due to floatation nanofibers in the formic acid solutions, the diameter decreased and incorporated TiO₂ nanoparticles were exposed on the outer surface of fibers. The results revealed that best treatment performance was about 77%. Furthermore, by using A.R.F process and the decrease in polymer concentrations improved on Cu²⁺ removal from 77% to 92.1%, as a result of which nanoparticles' exposure was further improved.

Keywords: Nylon 6-6; Decreasing Diameter; Copper ion; exposure; TiO₂ nanoparticles

1. Introduction

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