



Keratin Extraction from Domestic Coarse and Fine Wool and the Influence of Keratin Concentration on the Formation of Keratin/PEO Blend Nanofibres Electrospun Mats

M. Katić,^{a,*} T. Rijavec,^b S. Janjić,^a M. Kurečić,^c

^a*Univerzitet u Banjoj Luci, Tehnološki fakultet, Vojvode Stepe Stepanovica 73, 78 000 Banja Luka, BIH*

^b*Univerza v Ljubljani, Naravoslovno tehniška fakulteta, Snežniška ulica 5 SI-1000 Ljubljana, Slovenia*

^c*Univerza v Mariboru, Fakulteta za strojništvo, Smetanova 17, 2000 Maribor, Slovenia*

[*maja.katic@tf.unibl.org](mailto:maja.katic@tf.unibl.org)

Significant amounts of unused and discarded wool from domestic sheep in BiH represent waste and unused of this significant natural fibre. Keratin, which is an integral part of wool, is a renewable biopolymer with biocompatibility and biodegradability properties. Due to the content of a large number of functional groups, regenerated keratin can be used to make highly absorbent nanofibers for medical, ecological protection and other technical textiles. In this work, by using mercaptoethanol keratin in the time from 6 hours to 48 hours was extracted from wool in a form of solution, from which keratin films were further prepared. Extraction from domestic coarse and fine wool for 48 hours provides sufficient utilization of keratin. Further, from a solution of keratin films in conc. formic acid and aqueous polyethylene oxide (PEO) solution in ratios of wt. % 25/75, 50/50 and 75/25 were prepared spinning solutions for making nanofibers using a single-needle electrospinning process. Due to the poor mechanical characteristics of pure keratin poly(ethylene oxide) is added to keratin aqueous solutions to enhance electrospinnability due to the increase in the viscosity of the solution. The nanofibers spun from the keratin / polyethylene oxide solution on nozzle devices were characterized by SEM microscopy and FT-IR spectroscopy methods to determine the nanofiber morphology. The obtained keratin/PEO nanofibers in the ratio of wt. % 75/25 promote the formation of continuous nanofibers without defects.

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