EFFECT ON HONEY CONCENTRATION ON MORPHOLOGY OF BUBBLE-ELECTROSPUN POLYVINYL ALCOHOL/HONEY FIBERS

by

Chang LIU\textsuperscript{a,b}, Lan XU\textsuperscript{a,b}, Fujuan LIU\textsuperscript{a,b}, and Ji-Huan HE\textsuperscript{a,b*}

\textsuperscript{a} National Engineering Laboratory for Modern Silk, College of Textile and Clothing Engineering, Soochow University, Suzhou, China
\textsuperscript{b} Nantong Textile Institute, Soochow University, Nantong, China

Short paper
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In this study, polyvinyl alcohol fibers containing honey were produced by bubble electrospinning. The surface morphologies of polyvinyl alcohol fibers were studied by a scanning electron microscopy. The results showed the mean diameter of fibers increased as the ratio of honey increased.

Key words: nanofibers mat, honey, concentration, structure

Instruction

Honey is not only healthy drinking, but also wound care in ancient times. It is an environmentally friendly material and may play an irreplaceable role in the medical field [1]. In this paper, a control amount of honey was dissolved in the 7 wt.% polyvinyl alcohol (PVA) solutions with the different weight ratio. The PVA fibers containing honey were produced by bubble electrospinning [2-4].

Experiment

About 14 g PVA particles (1750 ± 50) and 2 g dodecylbenzenesulfonic acid are put into 184 g deionized water to gain 7 wt.% PVA mixture. Then a control amount of honey was dissolved in the PVA solutions with the different weight ratio (PVA/honey), such as 50/0, 49/1, 48/2, and 46/4. Bubble electrospinning experiments were carried out at room temperature. The morphologies of PVA/honey nanofibers were studied by scanning electron microscope (SEM). The fiber diameters were measured using Image J software.

Result and discussion

Figure 1 showed SEM photos of PVA fibers containing various ratios of honey. It could be seen that the mean diameter of fibers increased as the ratio of honey increased, and the hierarchical structure was formed, so that we obtained the porous nanofibers mats. In the meantime, it occurred that the fibers crossed bonding with each other while the ratio of honey reached a certain proportion, fig. 1(d). Above all, we got the conclusion that we could get porous breathable nanofibers mat through bubble-electrospinning PVA solution containing honey.

\* Corresponding author; e-mail: hejihuan@suda.edu.cn
Conclusion

This study simply introduced the effect of honey concentration on bubble electrospun PVA/honey fibers mats. In order to make the properties of PVA/honey fibers mat more stable and better, further research will be done later. This research will lead to wide potential applications in various engineering fields.

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