

ELECTROSPUN POLYVINYL ALCOHOL-HONEY NANOFIBERS

by

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Short paper
DOI: 10.2298/TSCI1305549W

This paper suggests a method for fabrication of polyvinyl alcohol-honey nanofibers by electrospinning. Polyvinyl alcohol and honey are all biocompatible and environmentally friendly materials. This combination will lead to wide potential applications in various engineering fields.

Key words: *polyvinyl alcohol, honey, nanofiber, electrospinning*

Introduction

Nanofibers have gained more and more interests of researchers due to their potential applications [1-3]. The polyvinyl alcohol (PVA) and honey are both biocompatible materials, and the PVA-honey nanofibers have special applications in tissue engineering. Maleki *et al.* [4] conducted electrospinning experiments with different mass ratio of PVA and honey solution. In Maleki's research, however, the concentration of the solution is comparatively low (7.5 wt.%). A higher concentration is much needed to guarantee excellent mechanical property in practical application.

In this paper, a PVA-honey solution with high concentration is used to produce PVA-honey nanofibers.

Experimental

Firstly, 2 g PVA particles (1750 ± 50) are put into 18 g deionized water to obtain 10 wt.% PVA mixture at room temperature. Stir the mixture in magnetic stirring apparatus at 90 °C until a clear and transparent solution is obtained.

Secondly, add 2 g acacia honey to the PVA solution and keep stirring until the new solution becomes clear and homogeneous again. Put the final solution to cool down at room temperature.

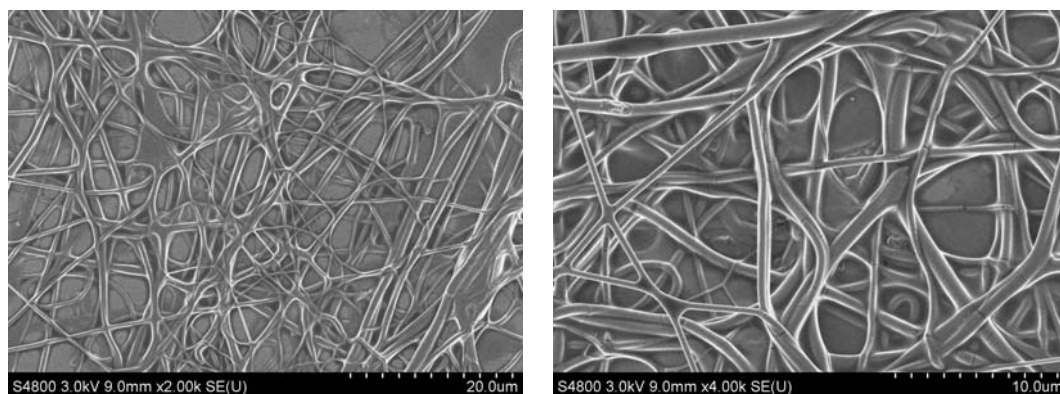
The solution is loaded into an injection syringe with a metal needle on which a high voltage is applied. The collector which is grounded is laid in front of the needle with certain distance. In present research, the voltage is 30 kV, the distance between needle and collector is 20 cm and the flow rate of the solution is 1 mL/h.

Figure 1 shows the scanning electron microscopy (SEM, S-4800, Hitachi, Tokyo, Japan) photos of PVA-honey nanofibers.

Conclusions

A mixture of PVA and honey with comparatively high concentration is electrospun to produce PVA-honey nanofibers. Thermal effect on the spinning process and product size is obvious which will be studied later.

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**Figure 1****Acknowledgment**

The work is supported by Priority Academic Program Development of Jiangsu Higher Education Institutions (PAPD), National Natural Science Foundation of China under grant No. 61303236 and No.11372205 and Project for Six Kinds of Top Talents in Jiangsu Province under grant No. ZBZZ-035, Science & Technology Pillar Program of Jiangsu Province under grant No. BE2013072.

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