EFFECT OF DIRECTION OF BLOWING AIR ON MORPHOLOGY OF NANOFIBERS BY BUBBFL SPINNING

by

Shengzhong ZHANG a,b, Lei ZHAO a,b,c*, Chun-Hui HE c, Hong-Yan LIU d, and Qi-Long SUN e

a College of Textile and Costume, Yancheng Institute of Industry Technology, Yancheng, China
b Jiangsu R & D Center of the Ecological Textile Engineering & Technology, Yancheng Institute of Industry Technology, Yancheng, China
c Nantong Bubbfil Nanotechnology Company Limited, Nantong, China
d School of Fashion Technology, Zhongyuan University of Technology, Zhengzhou, China
e School of Textile and Clothing, Nantong University, Nantong, China

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Blowing air in bubbfil spinning process can be used to not only overcome the surface tension of polymer bubbles, but also pull the debris to form either nanofibers or yarns. This paper studies experimentally the direction of blowing air on the morphology of obtained nanofibers.

Key words: air injection, bubble electrospinning, surface morphology, nanofiber

Introduction

Acetate fiber as a white solid, which has flexible and transparent property, has many advantages in textile engineering, such as surface gloss, easy molding and thermoplastic processing. Bubbfil spinning is a simple and effective method to produce nanofibers using polymer solution or melt [1-6], cellulose acetate is used to replace the natural cellulose in the field of electrospinning, since it is easy to dissolve in organic solvents. In this research, hot air blowing device was installed near the receptor of bubbfil electrospinning to study effect of blowing direction on the spinning process.

Experiment

The volatile liquid dichloromethane and acetone was mixed into solvent with the volume ratio of 3:1, which dissolve the discarded acetate fiber into acetate cellulose solution with the concentration of 7.5%. Figure 1 is the experimental set-up showing the blowing direction.

Discussion and conclusion

It can be seen from fig. 2 and tab. 1 that the horizontal direction of blowing air can be used to fabricate parallel nanofibers, and the entry angle of blowing air can adjust effectively orientation of obtained nanofibers. A suitable choice of the entry angle can produce yarns consisted of multiple nanofibers.

* Corresponding author; e-mail: zhaolei7365@163.com
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