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Distribution of the aligned nanofibers in centrifugal spinning system

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Centrifugal-jet spinning is an emerging technique for fabricating micro-to-nanofibers in recent years. Compared with electro-spinning, it showed advantages of high production rate and insensitive dielectric constant of materials. In particular, this spinning technique is effective for preparing aligned fibers. Aligned fibrous mats have potential applications for composite materials, reinforcements, electrochemical sensing, bone and blood vessel engineering and tissue engineering which often require well-aligned and highly ordered architectures. By studying the orientation of the nanofibers according to the position of the collector in the centrifugal spinning system, it is possible to take the convenience of the process. Poly (vinyl alcohol) (PVA) is a semi-crystalline hydrophilic polymer with good chemical and thermal stability. It has many appealing features such as biocompatibility, high water permeability, easy process ability and chemical resistance. In this study, we investigated the factors affecting nanofiber formation, and studied the morphology of nanofibers collected at the collector and the positions where the fibers were formed according to the changes of the factors by using PVA. The morphological changes were observed in detail by field-emission scanning electron microscopy. The prepared PVA nanofiber webs and highly aligned nanofibers were characterized by field-emission scanning electron microscopy, transmission electron microscopy, thermogravimetry and differential scanning calorimetric technique.

Biography

Seong Baek Yang is a PhD student, conducting research on nanomaterial manufacturing and spinning. He is also interested in the production of nanocomposites using biopolymers and environmentally friendly polymers, and is actively conducting research on nanocomposite manufacturing using electrospinning and centrifugal spinning. In addition, PVA, a biocompatible polymer, has produced and reported for cosmetics, biomedical microspheres, fibers, and films, and fibers oriented by centrifugal spinning and improved electrospinning have reported. He focuses on the development of a variety of materials that are needed for the future industry and that will be applied in a variety of areas

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