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Editorial

Functional Nanofibers: Production and Applications

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Nanofibers are lighter material with higher surface area in comparison to polymeric film. The ease of producing functional nanofiber is another advantage over many nanomaterials. Functional nanofiber in particular has attained a greater interest in recent years. The applications of functional nanofibers are increasing in various technical fields such as water filter membranes, tissue engineering, biosensors, drug delivery systems, wound dressings, catalysis, antibacterial. This special issue is comprised of well-selective articles that discuss production of functional nanofibers their applications in different emerging fields.

M. Zhang et al. have presented exciting work on drug delivery using nanofibers. They used collagen that was extracted from abandoned *Rana chensinensis* skin in northeastern China via an acid enzymatic extraction method. They demonstrated two different nanofiber-vancomycin (VCM) systems, that is, VCM blended nanofibers and core-shell nanofibers with VCM in the core, and both systems sustained control release for a period of 80 hours. Another work was presented by R. Takai et al. on blood purification using composite nanofibers. About 10% of the population worldwide is affected by chronic kidney disease (CKD). The authors developed nanofiber meshes zeolite-polymer composite nanofibers for efficient adsorption of creatinine, which is a simpler and more accessible method for hemodialysis (HD) patients.

The authors from Brazil M. Martelli-Tosi et al. took the advantage of abounded raw material soya bean and produced cellulose nanofibers from soybean straw. They used a commercial enzyme to extract nanofibers. This enzymatic-mechanical treatment yields cellulose nanofibers with diameters of 5–15 nm that can be useful for biotechnological applications such as generation of bioethanol or biogas. Besides many other techniques, C. K. Saurabh et al. isolated cellulose nanofibers (diameter, 5–10 nm) from *Gigantochloa scortechinii* bamboo fibers. The resultant cellulose nanofibers were used as reinforcement material in epoxy based nanocomposites and showed improvement in tensile strength, flexural strength, and modulus of nanocomposites. N. H. Mohd et al. discussed modification on nanocrystalline cellulose properties derived from empty fruit bunches and showed the potential application for CO_2 capture.

B. Yalcinkaya et al. reported thin-film nanofibrous composite membrane for dead-end seawater desalination for nanofiltration. The composite membrane consists of a three-layer system including a nonwoven part as the supporting material, a nanofibrous scaffold as the porous surface, and an active layer. They prepared polyamide 6 nanofiber using nanospider production line. The resultant nanofibers are promising candidates for use as new high-performance nanofiltration membranes due to their high flux and ion rejection. Uniaxial alignment of electrospun nanofibers shows a greater interest recently in many fields. Y.-H. Wu et al. developed polypropylene coated spinneret and a metal spinneret and used to carry out the single-fluid electrospinning process. They effectively utilize the electrostatic repulsion during electrospinning and obtained improved alignment of nanofibers.

Carbon nanomaterials such as carbon nanotubes, carbon nanofibers, and graphene have recently been explored for energy storage application such as supercapacitor due to additional high specific surface area and unique electrical and chemical inertness properties. A. M. Saleem et al. presented a comprehensive review on performance enhancement of carbon nanomaterials for supercapacitors. C. H. Su and C. H. Huang discuss the impact of substrate outgassing on the growth of carbon nanotubes (CNT) using the single-pulse discharge method with aim to develop a simpler, safer, and more energy efficient technique for growing CNTs having zonal selectivity.

In summary, all authors put their great effort to present the production of functional nanofibers and showed variety of applications in different technical fields. We hope this special issue will provide better understanding of the subject and also provide new horizon of functional nanofibers.

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