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Electrospun nanofibers of biopolymers and biocomposites (Book Chapter)

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Abstract

In the field of one-dimensional (1D) materials, electrospinning has been extensively explored as a simple, viable, and versatile processing technique with effective control over the fibrous morphology. A wide range of polymers or organic molecules has been effectively spun into micro- and nanodimensions and has exhibited unique/superior properties due to the aspect ratio and specific surface area. Because of the renewability, ecofriendliness, and biocompatibility, biopolymers have received great interest over the last two decades and have been explored for various potential applications. From this perspective, natural polymers such as starch, cellulose, chitosan/chitin, gum, protein, and lignin have also been electrospun into nanofibers. They have also been explored for biomedical uses, energy storage/conversion, and environmental remediation. Thus, this chapter provides an overview of the research in electrospun nanofibers of natural polymers and their composites with carbon nanomaterials, cellulose nanofibers, clay/talc nanoparticles, and metal/metal oxide nanostructures. © 2021 Elsevier Ltd All rights reserved.

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