

A review on electrospun bio-based polymers for water treatment

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Abstract

Over the past decades, electrospinning of biopolymers down to nanoscale garnered much interest to address most of the millennia issues related to water treatment. The fabrication of these nanostructured membranes added a new dimension to the current nanotechnologies where a wide range of materials can be processed to their nanosize. Electrospinning is a simple and versatile technique to fabricate unique nanostructured membranes with fascinating properties for a wide spectrum of applications such as filtration and others. These nanostructured membranes, fabricated by electrospinning, were found to be of a paramount importance because of their advanced inherited properties such as large surface-to-volume ratio, as well as tuneable porosity, stability, and high permeability. The extensive research conducted on these materials extended the success of electrospinning not only to bio-based polymer nanofibres, but to their hybrids and their derivatives. The technique also created avenues for advanced and massive production of nanofibres. This paper reviews the recent developments in the electrospinning technique. Electrospinning of biopolymers, their blends and functionalization using metals/metal oxides, and the potential applications of electrospun nanofibrous membranes in water filtration are discussed.