

Electrospun nanofibrous materials for tissue engineering and drug delivery

REVIEW ARTICLE

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Abstract The electrospinning technique, which was invented about 100 years ago, has attracted more attention in recent years due to its possible biomedical applications. Electrospun fibers with high surface area to volume ratio and structures mimicking extracellular matrix (ECM) have shown great potential in tissue engineering and drug delivery. In order to develop electrospun fibers for these applications, different biocompatible materials have been used to fabricate fibers with different structures and morphologies, such as single fibers with different composition and structures (blending and core-shell composite fibers) and fiber assemblies (fiber bundles, membranes and scaffolds). This review summarizes the electrospinning techniques which control the composition and structures of the nanofibrous materials. It also outlines possible applications of these fibrous materials in skin, blood vessels, nervous system and bone tissue engineering, as well as in drug delivery.

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