Advocating Electrically Conductive Scaffolds with Low Immunogenicity for Biomedical Applications: A Review

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Abstract
Scaffolds support and promote the formation of new functional tissues through cellular interactions with these parameters. Polysaccharide-based polymers, such as collagen and chitosan, exhibit exceptional biocompatibility and biodegradability, while the degradability of synthetic polymers can be improved using chemical modifications. However, these modifications require multiple steps of chemical reactions to be carried out, which could potentially

compromise the end product's biosafety. At present, conducting polymers, such as poly(3,4-ethylenedioxythiophene) poly(4-styrenesulfonate) (PEDOT: PSS), polyaniline, and polypyrrole, are often incorporated into matrix scaffolds to produce electrically conductive scaffold composites. However, this will reduce the biodegradability rate of scaffolds and, therefore, agitate their biocompatibility. This article discusses the current trends in fabricating electrically conductive scaffolds, and provides some insight regarding how their immunogenicity performance can be interlinked with their physical and biodegradability properties.

Keywords

Author Keywords: PEDOT: PSS ; conducting polymer; conductive scaffolds; degradation rate; biocompatibility; fabrication of scaffolds; biomedical application; tissue engineering

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