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Biodegradable and Electrically Conducting Polymers for Biomedical Applications

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Abstract: Conducting polymers have been widely used in biomedical applications such as biosensors and tissue engineering but their non-degradability still poses a limitation. Therefore, great attention has been directed towards the recently developed degradable and electrically conductive polymers (DECs). The different strategies for synthesis of degradable and conducting polymers containing conducting oligomers are summarized and discussed here as well as the influence of different macromolecular architectures such as linear, star-shaped, hyperbranched and cross-linked DECs. Blends and composites of biodegradable and conductive polymers are also discussed. The developing trends and challenges with the design of DECs are also presented.

Keyword: Macromolecular architecture; Aliphatic polyesters; Tissue regeneration; Aniline oligomers; Degradable conducting copolymers

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