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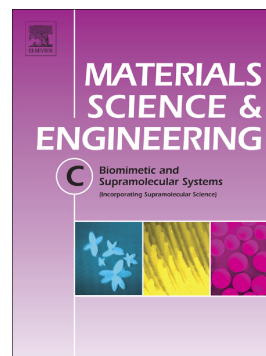
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Mussel-inspired surface modification of titania nanotubes as a novel drug delivery system

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Abstract

Titania nanotubes (TNT_s) have attracted considerable attention for the development of new devices for local drug delivery applications. In this study TNT_s were synthesized by hydrothermal method from titania nanoparticles and then the surface of TNT_s were functionalized by in situ polymerization of bioinspired polydopamine (PDA). The proposed strategies emphasized on remarkable properties of these materials and their unique combination to design local drug delivery system with advanced performance. The samples were characterized using Transmission Electron Microscope (TEM), Field Emission Scanning Electron Microscope (FESEM), X-ray diffraction pattern (XRD), Fourier-transform infrared spectroscopy (FTIR), thermogravimetric analysis (TGA) and surface area analysis (BET). The results showed that the specific surface area significantly is increased by creating tubular nanostructure. TGA results indicated Surface functionalization of TNT_s with PDA (TNT_s-PDA) about 19.3% that led to increase biocompatibility and bioactivity of TNT_s as well as improve

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