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Electrochemical Deposition Behavior and Characterization of Pd-Ag-HAp Nanoparticles on Ultra-fine TiO₂ Nanotubes

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Abstract

The deposition of ultra-fine Pd/Ag/HAp nanoparticles onto TiO₂ nanotubes has been performed by an electrochemical method using a mixed electrolyte solution. Electrochemical deposition was carried out under constant voltage, and Pd/Ag/HAp nanoparticles were carefully added in the mixed electrolyte of 1.7M (NH₄)H₂PO₄+0.4M NH₄F, which was slowly rotated by a magnetic stirrer on a hot plate in order to increase the diffusion rate of electrolyte ions. The electrochemical deposition behavior, chemical bonding state, and surface characteristics of the Pd/Ag/HAp nanoparticles have been investigated by FE-SEM, EDS, and XPS.

The Pd/Ag/HAp nanoparticles were uniformly electrodeposited onto the whole top surface and around the tube walls, including the inner side and outer side, of the ultra-fine TiO₂

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