

Biomaterial and its manufacturing method

Able to maintain excellent antibacterial properties for a long time!

Overview

Biomaterials such as artificial joints are made of Ti (titanium), which can adhere directly to the bone. It is known that biomaterials can be coated with ACP film (amorphous calcium phosphate) to improve osteogenic potential. However, ACP film dissolves in vivo in a short period of time, so the improvement is required to retain for a long time. One idea is to add Ta (tantalum) to prevent dissolution but this method does not have antibacterial properties. It is possible to add Ag (silver) to the ACP film to give antibacterial properties, but the dissolution is not possible to control.

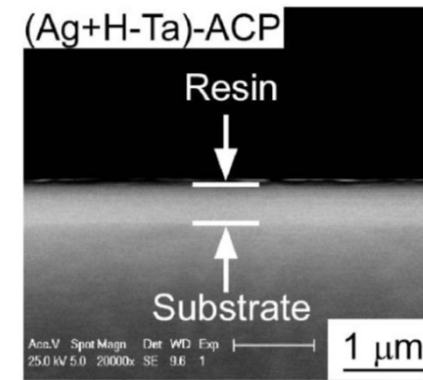
This invention is about a biomaterial and its manufacturing method that can prevent the ACP film dissolution of the surface while having excellent antibacterial properties. The biomaterial is characterized by an ACP film with Ag and Ta doped on the substrate surface. The coating film is formed by RF magnetron sputtering method. The addition of Ta suppresses the ACP film dissolution while having an excellent antibacterial properties due to the Ag addition. This invention has made possible to sustain an excellent antimicrobial properties over a long period of time.

Product Application

- Artificial joint
- Dental implant
- Biomaterials field

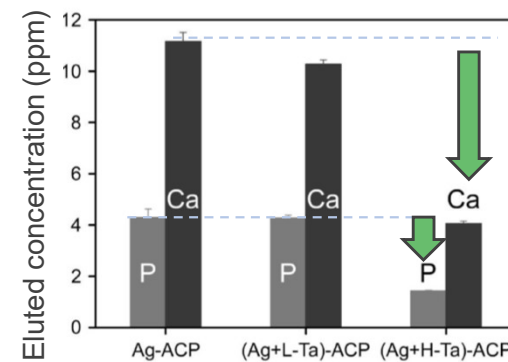
IP Data

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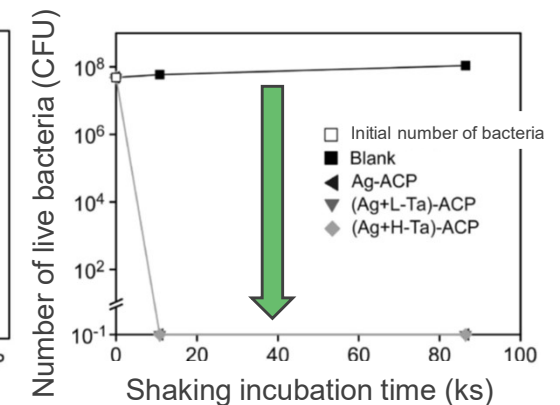


Able to maintain excellent antimicrobial properties by preventing ACP film dissolution

Prevent dissolution



Antimicrobial properties



Related Works

J. Wu, K. Ueda, T. Narushima: "Fabrication of Ag and Ta co-doped amorphous calcium phosphate coating films by radiofrequency magnetron sputtering and their antibacterial activity," Mater. Sci. Eng. C, 109 (2020) 110599.

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