

Titanium alloy for biomedical application

High antibacterial property, biocompatibility and a low Young's modulus close to the cortical bone

Overview

A requirement for biocompatible Ti alloy for orthopedic implants is to suppress stress shielding, which occurs because of the large difference between Young's moduli of the prosthetic stem and the cortical bone (10–30 GPa). Meanwhile, conventional autoclave sterilization before implant exhibits the discoloration and heaviest particulate contamination, and some multiple sterilization regimens for metallic materials may pose serious biological concerns.

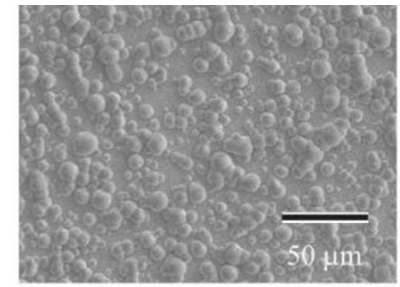
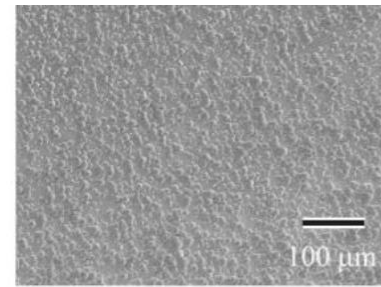
The present invention can provide the necessary functions to a Ti implant material without impairing the low Young's modulus of Ti alloy. It possesses high antibacterial properties with a high antibacterial activity value above 2.0 from the antibacterial test (JIS R 1702) and osseointegration from hydroxyapatite formation on the surface of Ti alloy in simulated body fluid.

Product Application

- ❑ Titanium alloy for biomedical use, especially for artificial prosthetic stem.

IP Data

IP No. : JP2021-074013
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 Admin No. : T19-802



Surface morphology of Ti alloy after immersing in simulated body fluid, showing hydroxyapatite formation.

Features・Outstandings

As the patent has not yet been published, disclosing information and commercializing can be done after concluding an agreement that includes a confidentiality clause such as an option agreement. Please feel free to contact us.

Related Works

- [1] S. Hanada, N. Masahashi, T.K. Jung, S. Semboshi, Mater. Sci. Eng. A 802 (2021) 140645.
- [2] MASAHASHI Naoya, MORI Yu, TANAKA Hidekazu, KOGURE Atsushi, NORO Atsushi, KAMIMURA Masayuki, YAMADA Norikazu, ITOI Eiji, HANADA Shuji, Titanium, 34 (2016) 216–221

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