

Optimizing the Production of Porous Alloys Based on TiSi

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Titanium is widely used as biomaterial due to its excellent corrosion resistance, caused by TiO_2 layer that is spontaneously formed on its surface, biocompatibility and good osseointegration ability. To approach mechanical properties to human bone there is increase of using porous titanium. That form has lower density, causes better ingrowth of bone tissue which makes a strong bond between implant and bone. Porosity also decreases Young's modulus, which causes that the "stress shielding" is eliminated. New alloys based on titanium and silicon seems to be a perspective material for biomedical applications. This work is devoted to the optimization of the alloy composition and the addition of the pore-forming agent. It has been shown that this alloy can achieve the mechanical properties and microstructural features comparable with the human bone.

Keywords: Titanium, biocompatibility, porous alloys, microstructure, mechanical properties.

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