

عنوان مقاله:

A review on nanostructured stainless steel implants for biomedical application

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خلاصه مقاله:

Over the last two decades, many researchers have developed a variety of stainless steel-based medical implant types, taking full advantage of nanostructuring technologies. In this paper the application, fabrication and development of nanostructured stainless steel based materials with new composition for medical implants will be discussed. It is well established that application of severe plastic deformation (SPD) can decrease the grain size of metals and alloys significantly to the nanometer range. Among all the available SPD methods, equal channel angular pressing (ECAP) is very applicable. Stainless Steel became the raw structural material for the majority of the developed medical implants, and several techniques had to be studied and established in order to fabricate a feasible stainless steel-based neural probe. These nanostructured implants present a superior performance mechanically, biologically and electrically, when compared to the conventional implants. Finally, the effect of alloying elements on the bio-interaction of stainless steel will be explained.

کلمات کلیدی:

(Implants, Nanostructure, Stainless steel, Severe plastic deformation (SPD)

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