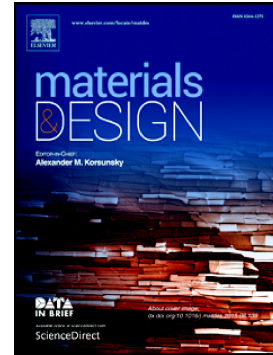


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Development of new β/α' -Ti-Nb-Zr biocompatible coating with low Young's modulus and high toughness for medical applications

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Abstract

Ideal biomaterials to fabricate orthopedic implants, especially for load-bearing joint replacements, should include only non-toxic elements with good biocompatibility, high corrosion resistance and surface bioactivity, together with a good combination of mechanical properties. Based on these criteria, a manufacturing approach based on sputtering techniques can be ideal to develop coatings free of toxic elements tailored for advanced applications on pure titanium or titanium alloys used in biomedical applications. In this work, the ternary Ti-Nb-Zr system was used to develop non-toxic β -rich Ti coatings with several complex microstructures by careful control of Nb and Zr concentration and deposition parameters, such as bias voltage. Depending on the alloy

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