**ZrCu BASED thin films metallic glasses in medicine**

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Biomaterials represent a wildly used category of materials for different types of medical related issues, such as physically replacement of a diseased biological part, as bones, teethes, types of joints and so on, or just for repairing. Usually, these materials need to develop a strong bond between them and the tissue that comes in direct contact with it and should be able to coexist without having unwanted and inappropriate effects. Also, restoring the integrity of the damaged bone leads to the fact that the patient life should be prolonged and the quality improved.

Several studies reinforce the idea that, because of their technological promise for practical applications and scientific significance in the biomedical realm, bioactive glasses have sparked extensive study attention. Recently, they seem to improve the biocompatibility and bioactivity and have the tendency to integrate well with the tissue, in comparation with the metal implants and also, including the facilitation of the tissue regeneration as studies have shown.

The goal of the present study is to investigate the novel ZrCu-based ternary Thin Film Metallic Glasses (TFMGs) as a solution for orthopedic implants. The coatings consisted in ternary coatings based on ZrCu with small addition of Si, Mg, Ca, Sr, Mo. The coatings were performed by cathodic arc technique using a system with high deposition rate. The used substates were 316L steel and Ti6Al4V alloy, commonly substates used in medicine. The elemental and phase compositions of the coatings were determined. Hardness, adhesion, roughness and corrosion performance at 37⁰C in SBF, in comparison with the characteristics of uncoated alloys, were investigated. All of the coatings were more proper for coatings of Ti6Al4V alloy, than of the 316L steel.

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