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Hard (Zr,Ti) alloy films with small amount of oxygen resistant to crackingZuzana Číperová¹, Jindřich Musil¹, Sergei Zenkin², Radomír Čerstvý¹, Stanislav Haviar¹¹University of West Bohemia, Plzeň, Czech Republic ²Tomsk Polytechnic University, Tomsk, Russian Federation

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The poster reports on the effect of the addition of small amount of oxygen into Ar sputtering gas on the microstructure, mechanical properties and macrostress of the (Zr,Ti) alloy films prepared by DC magnetron sputtering. It was found that the addition of small amount of oxygen into Ar sputtering gas makes it possible to sputter nanocrystalline (Zr,Ti,O) alloy films with high hardness $H > 10$ GPa, high ratio $H/E^* \geq 0.1$, high elastic recovery $W_e \geq 60\%$ and enhanced resistance to cracking; here E^* is the effective Young's modulus. The main result of the presented investigation is the demonstration that the incorporation of a small amount of O into a (Zr,Ti) alloy film is a very effective way to form the flexible (Zr,Ti,O) alloy films with enhanced resistance to cracking. [1]

[1] J. Musil, S. Zenkin, R. Čerstvý, S. Haviar, Z. Číperová: (Zr,Ti,O) alloy films with enhanced hardness and resistance to cracking prepared by magnetron sputtering, Surface and Coatings Technology 322 (2017), 86-91.

Keywords

(Zr,Ti,O) alloy films

Structure

Microstructure

Mechanical properties

Resistance to cracking