Fabrication and Characterization of Zirconium Microplasma Coatings for Biomedical Applications

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This paper presents new results of studying the influence of parameters of Zr wire microplasma spraying (MPS) on the structure of Zr coatings. Individual particles of sprayed Zr wire and Zr splats on the substrate were collected under various spraying parameters and evaluated by Scanning Electron Microscopy (SEM) to establish a relationship with the coating microstructure. The particles were characterized by measurement of their sizes and the obtained results were evaluated in terms of their degree of melting. This was compared with the experimentally observed coating microstructure type and finally correlated to the investigated coating porosity to select the specific MPS parameters to deposit Zr coatings onto medical implants from Ti alloy.

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