a dense layer of FeAl intermetallic. The presented work shows the results of the used technique to produce FeAl intermetallic, through the use of thermal spray and posterior remelting. This posterior treatment allows the diffusion of aluminum in the used substratum and the formation of the intermetallic. The analyzed results by optical microscopy and MEV with EDS indicate the presence of homogeneous phases of AlFe and AlFeNiCr intermetallic, proceeding from the diffusion of aluminum in the iron and vice versa. The microhardness results confirm the formation of this intermetallic, being that the type varies in function of the percentages of aluminum and iron. Salt Spray tests applied in the aluminum coated carbon steel samples indicate the resistance of coverings on this way.

02/04

Corrosion Resistance Evaluation Of Porous Ti With Biomimetic Coatings

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Metallic implants contact the body fluids during their working life; consequently, when new materials and/or coating processes are being developed; their corrosion resistance has to be evaluated. In this work, porous titanium samples processed by powder metallurgy and coated with biomimetic coatings, obtained during different periods of immersion in a SBF solution, were tested for corrosion resistance in a phosphate buffer solution (PBS). Uncoated samples were also tested for comparison. The corrosion resistance was evaluated by electrochemical impedance spectroscopy and potentiodynamic polarization curves. The electrochemical results indicated the growth of a surface film on the porous Ti samples with immersion in the SBF solution that increased their corrosion resistance. The longer the time of immersion in the SBF solution the greater the corrosion resistance of the biomimetic coated samples. The results indicate that biomimetic coatings, besides helping osteointegration, increase the implant corrosion resistance.

02/05

Investigation on the corrosion resistance of Nd-Fe-B magnets with phosphate conversion and silane coatings

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Nd-Fe-B sintered magnets are highly susceptible to corrosion due to their intrinsic porosity and complex microstructure. On the other hand, they present excellent magnetic properties finding several applications, for instance as materials for dentistry. In this last application they can be used for dental implants or as retentive devices for overdentures and, therefore, high corrosion resistance is required being usually used encapsulated inside stainless steel or titanium cans. Nevertheless, if saliva is able to leak into the can the magnet will corrode and further protection against corrosion should be applied. In this study, the corrosion resistance of Nd-Fe-B magnets after phosphating, silanization, and phosphating followed by silanization was evaluated by electrochemical techniques. The samples surface morphology was observed previous to and after corrosion tests by Scanning Electron Microscopy. All surface treatments increased the magnets corrosion resistance, but the best performance was obtained by the samples exposed to the dual treatment, phosphating followed by silanization.