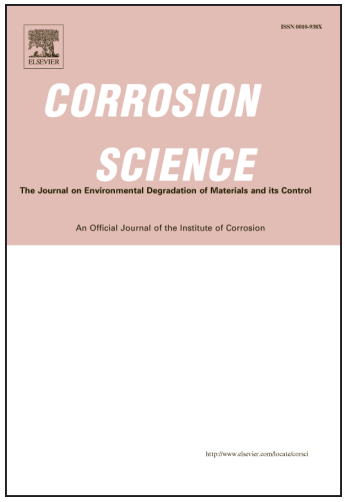

Short communication

Annealing effects on the corrosion resistance of ultrafine-grained pure titanium

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Annealing Effects on the Corrosion Resistance of Ultrafine-grained Pure Titanium

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Abstract

The effect of annealing on the corrosion behaviour of the ultrafine-grained pure titanium (Ti) produced by high-ratio differential speed rolling was examined in a 0.5 M H_2SO_4 solution using potentiodynamic polarisation and weight loss methods. The results indicated that post-rolling annealing signficantly affected the corrosion resistance of ultrafine-grained Ti. It was concluded that annealing treatments leading to a significant decrease in dislocation density and residual stress while maintaining an ultrafine grain size and strong basal texture can allow for the development of pure Ti with a good combination of high strength and high corrosion resistance.

Keywords: A. titanium; B. polarisation; B. weight loss; C. Acid corrosion; C. effects of