

عنوان مقاله:

The effect on dissolution and passivation of ion implantation of nitrogen and molybdenum in austenitic stainless steels

محل انتشار:

چهارمین کنگره ملی خوردگی ایران (سال: 1374)

تعداد صفحات اصل مقاله: 9

نویسنده:

Sadough-vanini - Mechanical Engineering Department, Amirkabir University of Technology, Tehran, Iran

خلاصه مقاله:

WS and electrochemical analysis have been used to investigate the influence of Mo and N implantation on dissolution and passivation of 304 type stainless steel. The samples were implanted first with Mo ions and then with N ions (2.5×10^{16} N and 2.5×10^{16} Mo atoms/cm²). Prior to the electrochemical experiments, with weight loss Mo and N concentrations were prepared by argon ion sputtering the implanted alloy for a fixed time in the pressure chamber of the system in order to reach a well-defined point on the Mo and N depth profiles. Three regions of the implantation profiles (high Mo-high N concentration, medium Mo-high N concentration and low Mo-medium N concentration) were investigated. Far from the surface the samples were treated without air exposure from the moment of implantation to an electrochemical dissolution in an inert gas glove box. The Mo-N co-implantation modifies the electrochemical behaviour of the alloy in 0.5M %SO₄ solution. The anodic dissolution current density increases with decreasing Mo concentration at the surface and with increasing N concentration. Surface analysis by WDS and XPS shows that co-implanted N and Mo (in the metallic state) are enriched on the surface during dissolution and passivation of the alloy. The passive films formed on the implanted alloy have a bilayer structure with an inner oxide layer and outer hydroxide layer. The presence of Mo and N favors the formation of Cr hydroxide and Cr nitride.

کلمات کلیدی:

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/34963>

