عنوان مقاله:

Study on corrosion behavior of AA 2024 aluminum alloy after active-screen and conventional plasma nitriding

محل انتشار:

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خلاصه مقاله:

Nowadays, active-screen plasma nitriding method is going to become a widely used nitriding process due to some advantages, e.g. elimination of work piece edge effects of glow discharge. To investigate possibility of non-ferrous alloys nitriding by the use of this process, corrosion properties of AA 2024 aluminum alloy after active-screen and conventional plasma nitriding at 400, 450 and 500ºC temperatures, 10 hours process time and 25%H2-75%N2 containing atmosphere were studied. The screen was made of the commercial pure aluminum. Scanning electron microscopy results showed that a uniform AlN layer is formed on the surface of all samples. In lower temperatures nitride particles were grown on the surface, but by increasing the process temperature, these nitrides disappeared and a uniform layer was formed. Also, X-ray diffraction analysis confirmed the formation of AlN on the surface. Polarization tests were conducted in 3.5% NaCl solution. Results showed improvement in corrosion resistance after both active-screen and conventional plasma nitriding

کلمات کلیدی:

AA 2024 aluminum alloy, active-screen and conventional plasma nitriding, nitride particles, corrosion