

8th International Conference on Physical and Numerical Simulation of Materials Processing (ICPNS)

14–17 October 2016

Seattle, Washington | Hosted by Purdue University

SESSION 8: POSTER, GRAND PACIFIC BALLROOM

SUNDAY, OCTOBER 15, 2016

Effect of Er on microstructure and electrochemical performance of Al–Zn–In anode

Zhengbing Xu, Guangxi University

ABSTRACT

The effect of Er content on microstructure of Al–Zn–In alloy anodes were studied by using scanning electron microscopy (SEM), energy spectrum analysis, and X-ray diffraction analysis. The polarization curves and EIS of Al–Zn–In alloy with different Er contents were tested in the 3.5 wt% NaCl solution. The results show that with the increase of Er content, the dendrite was refined, the amount of inter-dendritic precipitates was increased, the corrosion potential became more positive, and the radius of electrochemical impedance spectroscopy enlarged, and corrosion rate also decreased. Al–5Zn–0.03In–1Er alloy has refined dendrites and proper amount of precipitates, with the corrosion morphologies of independent pitting, corrosion in uniformity, which is an ideal choice for using as sacrificial alloy.

KEYWORDS: Al–Zn–In sacrificial alloy, Er, microstructure, polarization curve, EIS