

A Correlation between Electrochemical Parameters and Stress Corrosion
Cracking of Alloy 600 in High Temperature Caustic Solution

Jae Sun Baek, Jung Gu Kim
Sungkyunkwan University
300 Chunchun-dong, Jangan-gu, Suwon 440-746, Korea

Do Haeng Hur, Joung Soo Kim
Korea Atomic Energy Research Institute
150 Duckjin-dong, Yuseoung-gu, Daejeon 305-353, Korea

Abstract

The properties of the passive films formed on Alloy 600 at different applied potentials in 10% NaOH solution at 315°C was studied using in situ AC impedance and polarization measurements. The results were correlated with the stress corrosion cracking (SCC) behavior obtained from the C-ring tests in the same conditions. The change of the semiconductive property and the peak of relaxation time were observed at 0.2 V where the SCC rate showed a maximum. These results were also consistent with the prediction parameter for SCC obtained from fast and slow polarization scans.