



Effects of the B/Li ratio on the structure and composition of the oxide layer formed on a 316L SS in simulated PWR primary water.

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Stress corrosion cracking (SCC) has been one of the most significant ageing degradations for main components of light water reactors (LWRs). SCC is a complex phenomenon driven by various parameters, such as water chemistry and material composition, among others. The main parameters of the PWR primary coolant chemistry are boric acid, lithium hydroxide and hydrogen concentrations, and the resulting pH level. In this work the influence of boron and lithium on the properties of the oxide layers formed in PWR primary water has been analyzed. Due to the variation of proportions of B/Li is closely related to the evolution of the primary water chemistry during the cycle, it allow us to determine if this fact affects the composition, structure, thickness and morphology of the oxide layers formed on 316L in PWR primary water. The characterization of this oxide layer was carried out by different techniques: FEGSEM, TEM, AES and XPS.

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