

反应堆工程

压水堆条件下锌对奥氏体不锈钢腐蚀性能的影响

乔培鹏; 张乐福; 刘瑞芹; 姜苏青; 朱发文

上海交通大学 核科学与工程学院, 上海200240

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摘要 模拟压水堆一回路冷却剂环境, 对316和304奥氏体不锈钢在不加锌和加锌浓度为50 ppb的 315 °C溶液中进行了两组500 h腐蚀实验。结果表明, 锌能有效地降低两种材料的均匀腐蚀速率, 加锌后表面氧化膜厚度变薄, 氧化膜形貌和成分也有明显改变, 304不锈钢表面有大量针状腐蚀产物出现。

关键词 [压水堆](#) [一回路冷却剂](#) [加锌](#) [腐蚀](#) [氧化膜](#)

分类号

Zinc Addition Effects on General Corrosion of Austenitic Stainless Steels in PWR Primary Conditions

QIAO Pei -peng; ZHANG Le-fu; LIU Rui -qin; JIANG Su-qing; ZHU Fa-wen

School of Nuclear Science and Engineering, Shanghai Jiao Tong University, Shanghai 200240, China

Abstract Zinc addition effects on general corrosion of austenitic stainless steel 316 and 304 were investigated in simulated PWR primary coolant without zinc or with 50 ppb zinc addition at 315 °C for 500 h. The results show that with the addition of zinc, the corrosion rate of austenitic stainless steel is effectively reduced, the surface oxide film is thinner, the morphology and chemical composition of surface oxide scales are evidently different from those without zinc. There are needle-like corrosion products on the surface of stainless steel 304.

Key words [PWR](#) [primary coolant](#) [zinc addition](#) [corrosion](#) [oxide film](#)

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