

## Preparation of Protective Coating Film on Metal Alloy

**Authors :** Rana Th. A. Al-rubaye

**Abstract :** A novel chromium-free protective coating films based on a zeolite coating was growing onto a FeCrAlloy metal using in -situ hydrothermal method. The zeolite film was obtained using in-situ crystallization process that is capable of coating large surfaces with complex shape and in confined spaces has been developed. The zeolite coating offers an advantage of a high mechanical stability and thermal stability. The physico-chemical properties were investigated using X-ray diffraction (XRD), Electron microscopy (SEM), Energy Dispersive X-ray analysis (EDX) and Thermogravimetric Analysis (TGA). The transition from oxide-on-alloy wires to hydrothermally synthesised uniformly zeolite coated surfaces was followed using SEM and XRD. In addition, the robustness of the prepared coating was confirmed by subjecting these to thermal cycling (ambient to 550°C).

**Keywords :** fecralloy, zsm-5 zeolite, zeolite coatings, hydrothermal method

**Conference Title :** ICESE 2015 : International Conference on Environmental Science and Engineering

**Conference Location :** London, United Kingdom

**Conference Dates :** July 25-26, 2015