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Titre de la thèse :

Influence of the passive film on the corrosion of aluminium and aluminium-copper alloys

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This Phd project concerns the influence of the passive film on the corrosion of aluminium and aluminium-copper alloys. High strength aluminium alloys are widely used in the aircraft industry. However, due to the presence of alloying elements such as Cu, Fe or Mg and to the formation of intermetallic particles (IMPs), the aluminium alloys show decreased corrosion resistance. In order to better understand the corrosion behaviour of aluminium alloys, the surface chemistry, the alloy structure and the corresponding oxide layers formed on the alloy surface will be studied in details. The project will be based on the surface studies of model single crystalline substrates (pure aluminium and Al₂Cu phase) by means of surface techniques such as X-ray Photoelectron Spectroscopy (XPS), or Scanning Tunneling Microscopy (STM) in combination with electrochemical methods.

Mots clés : aluminium, aluminium alloys, corrosion, surface chemistry, intermetallic particles