



# Influence of yttrium on surface chemistry and stability of passive film in Al-based binary metallic glasses

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## Abstract

The effect of yttrium on the electrochemical polarization behavior, composition and semiconductor property of passive film in Al-Y glasses have been studied. It was found that the corrosion potential and passive current density are sensitive to the minor variation of yttrium content. The high Y-containing samples possess a homogeneous single layer passive film rich in yttrium. The passive film exhibits a p-type semiconducting behavior and the carrier density tends to be reduced with increasing yttrium due to the formation of  $YAlO_3$ . Higher yttrium content makes the passive film inert to electron transfer and the metastable pitting are inhibited.

**Key words:** Aluminum; Metallic glass; Metastable pitting; Passive film; Corrosion resistance

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