

Anodic Oxides on InSb(100) - Their Formation and Breakdown in Halogen-ion Containing KOH

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Abstract

The present work deals with anodization processes of p-type InSb(100) in KOH electrolyte. The growth of anodic oxides is studied in dependence of the applied potential and time. Moreover the influence of halogen-ions added to the KOH-electrolyte on the electrochemical behaviour is described. In pure KOH, a dense and thick oxide layer can be formed. When the electrolyte contains halogen-ions, the quality of the oxide layer is reduced. For high halogen concentrations and potentials higher than the breakdown potential, a black, brittle layer of Antimony-oxo-halogenide [1] is formed and an Indium-rich precipitate occurs in the electrolyte. The breakdown potential is correlated to the concentration of halogen-ions in the electrolyte. The breakdown potential shows a $[X^-]^{-1.5}$ proportionality with the halogen-ion concentration in the electrolyte, which is an inversely proportionality with the density of halogen-ions on the semiconductor surface.

References

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