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Chemical Vapor Deposition of Ga₂O₃ Thin Films on Si Substrates

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Gallium oxide thin films have promising properties such as high-temperature stability and n-type semiconducting properties at high temperatures above 600°C.⁽¹⁾ For several years polycrystalline Ga₂O₃ thin films have been investigated as a new material for high temperature gas sensors.⁽²⁾

In this work, we have deposited Ga₂O₃ thin films on Si substrates using a single precursor, Ga(O'Pr)₃, by CVD method in a high vacuum chamber. As-deposited Ga₂O₃ films were amorphous, but onset of a crystallization process was evident after annealing. The effect of annealing at different temperatures on the film structure was investigated by X-ray diffraction (XRD). Also surface morphologies were characterized by scanning electron microscopy (SEM). X-ray photoelectron spectroscopy (XPS) analysis shows a stoichiometric Ga/O ratio.

[References]

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