

Optical properties of gallium oxide films deposited by electron-beam evaporation

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Thin films of gallium oxide were deposited by electron-beam evaporation on unheated substrates. Samples were deposited either without oxygen, or under an oxygen partial pressure of 5×10^{-4} mbar. The films were amorphous. Films deposited with oxygen were stoichiometric, whereas those deposited without oxygen were substoichiometric. The optical properties of the films were derived from measurements, at normal incidence, of transmittance and reflectance. Films deposited without oxygen had higher values of the refractive index and extinction coefficient. The energy gaps were 5.04 and 4.84 eV for films deposited with and without oxygen, respectively. © 2003 American Institute of Physics. [DOI: 10.1063/1.1630845]