

Optical properties of chromium oxide thin films deposited by electron-beam evaporation

M.F. Al-Kuhaili *, S.M.A. Durrani

Department of Physics, King Fahd University of Petroleum and Minerals, Dhahran 31261, Saudi Arabia

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Abstract

Thin films of chromium oxide were deposited by electron-beam evaporation. The effects of substrate temperature on the structural, chemical and optical properties of the films were investigated. Films deposited on unheated substrates were amorphous and almost stoichiometric, whereas those deposited at 300 °C had microcrystallites embedded in an amorphous matrix and were less stoichiometric. The optical properties of the films were derived from transmittance measurements. It was found that the refractive index, the extinction coefficient and the optical bandgap all increased with substrate temperature.

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