

文献

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Effects of crystalline structural transition on electronic-band structure of chromium-doped indium oxide

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抄録 (Abstract)

The electronic-band structure parameters of chromium-doped indium oxide films with crystalline structural transition were determined by fitting the dielectric functions of Drude and Adachi's model to near-normal reflectance spectra. The evaluated optical bandgap shows a maximum at an intermediate state and decreases respectively toward highly and less ideally crystallized states. We explain this phenomenon by combining the effect of intrinsic bandgap narrowing with the Burstein-Moss shift, both due to the crystalline structural transition. This work provides important insights into electronic-band structures of less ideally structured materials. © 2011 Elsevier B.V. All rights reserved.

著者キーワード

Doped oxides; Indium oxides; Optical spectroscopy; Sputtering; Thin films; X-ray diffraction

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