

文献

Ortega, J.J.^{a b}, Aguilar-Frutis, M.A.^c, Alarcón, G.^c, Falcony, C.^d, Méndez-García, V.H.^{b e}, Araiza, J.J.^a

Band gap engineering of indium zinc oxide by nitrogen incorporation

(2014) *Materials Science and Engineering B: Solid-State Materials for Advanced Technology*, 187, pp. 83-88. 被引用数 1 回

^a Unidad Académica de Física, Universidad Autónoma de Zacatecas, Calzada Solidaridad esq. Paseo de la Bufa, Fracc. Progreso, C.P. 98060 Zacatecas, Mexico

^b Doctorado Institucional de Ingeniería y Ciencia de Materiales, Universidad Autónoma de San Luis Potosí, Av. Salvador Nava, Zona Universitaria, C.P.-78270-San-Luis-Potosí, Mexico

^c Centro de Investigación en Ciencia Aplicada y Tecnología Avanzada, Instituto Politécnico Nacional, Unidad Legarí, Calz. Legarí No. 694, Col. Irrigación, C.P. 11500 México D.F., Mexico

^d Departamento de Física, Centro de Investigación y Estudios Avanzados, Instituto Politécnico Nacional Campus Zacatenco, Av. Instit. Polit. Naci. 2508, Col. San Pedro Zaca., C.P. 07360 México D.F., Mexico

^e Laboratorio Nacional-CIACyT, Universidad Autónoma de San Luis Potosí, Sierra Leona 550, Lomas 2a Secc, C.P.-78210-San-Luis-Potosí, Mexico

抄録 (Abstract)

The effects of nitrogen incorporation in indium zinc oxide films, as grown by RF reactive magnetron sputtering, on the structural, electrical and optical properties were studied. It was determined that the variation of the N₂/Ar ratio, in the reactive gas flux, was directly proportional to the nitrogen percentage measured in the sample, and the incorporated nitrogen, which substituted oxygen in the films induces changes in the band gap of the films. This phenomenon was observed by measurement of absorption and transmission spectroscopy in conjunction with spectral ellipsometry. To fit the ellipsometry spectra, the classical and **Adachi** dispersion models were used. The obtained optical parameters presented notable changes related to the increment of the nitrogen in the film. The band gap narrowed from 3.5 to 2.5 eV as the N₂/Ar ratio was increased. The lowest resistivity obtained for these films was $3.8 \times 10^{-4} \Omega \text{ cm}$ with a carrier concentration of $5.1 \times 10^{20} \text{ cm}^{-3}$. © 2014 Elsevier B.V.

著者キーワード

Band gap engineering; Band gap narrowing; Indium zinc oxynitride; Nitrogen incorporation

文献タイプ: Article

情報源: Scopus

Scopusについて
製品情報
収録コンテンツ

カスタマーサービス
ヘルプとお問い合わせ
Live Chat

Elsevierについて
Elsevierについて
Terms and Conditions
Privacy Policy

