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CORRECTION

Correction to: The role of process temperature on structural, optical, vibrational and electronic environments of thermal chemical vapor-deposited copper-doped zinc oxide nanostructured thin films

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In the original publication of the article, parts of the abstract were incorrect. The correct abstract appears as below.

Abstract

Copper incorporated zinc oxide (Cu–ZnO) nanostructure thin films were deposited by using a high-temperature chemical vapor deposition technique at 650–800 °C with Cu and Zn powder in O_2 and N_2 gas atmosphere. The Cu–ZnO thin films were characterized by AFM, XRD, FTIR, Raman spectroscopy, UV–Vis spectroscopy, and XPS to investigate the structural, vibrational, optical, and electronic environments of Cu–ZnO thin films. The AFM study revealed that nanoparticles of Cu–ZnO films are varied from 225 to 74 nm with increasing process temperature from 650 to 800 °C. The relative intensity of E2(high) phonon increases with increase in the process temperature 650–800 °C. The photoluminescence spectra of Cu-doped ZnO films showed a strong orange emission peak centered at 635.12 nm and 700.06 nm due to bound excitation and intrinsic defects, respectively. The Tauc optical bandgap of Cu–ZnO thin films decreased from 2.72 to 2.22 eV, due to the increase with an increase in copper doping concentration. Moreover, the semiempirical electronic environments of Zn 2p3/2, O(1 s), and Cu (2p) core orbital are analyzed by the Origin software.

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