TM-P007

Effect of TiO2 buffer layer on the electrical and optical properties of IGZO/TiO2 bi-layered films

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In and Ga doped ZnO (IGZO) thin films were prepared by radio frequency magnetron sputtering without intentional substrate heating on glass substrate and TiO2-deposited glass substrates to consider the effect of a thin TiO2 buffer layer on the optical and electrical properties of the films. The thicknesses of the TiO2 buffer layer and IGZO films were kept constant at 5 and 100 nm, respectively.

Since the IGZO/TiO2 bi-layered films show the higher FOM value than that of the IGZO single layer films, it is supposed that the IGZO/TiO2 bi-layered films will likely perform better in TCO applications than IGZO single layer films.

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Keywords: IGZO, TiO2, Figure of merit

TM-P008

Optoelectrical properties of IGZO/Cu bi-layered films deposited with DC and RF magnetron sputtering

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In and Ga doped ZnO (IGZO) films were deposited on 5 nm thick Cu film buffered Poly-carbonate (PC) substrates with RF magnetron sputtering and then the effect of Cu buffer layer on the optical and electrical properties of the films was investigated. While IGZO single layer films show the electrical resistivity of 1.2×10-1 Ωcm, IGZO/Cu bi-layered films show a lower resistivity of 1.6×10-3 Ωcm. Although the optical transmittance of the films in a visible wave length range is deteriorated by Cu buffer layer, IGZO films with 5 nm thick Cu buffer layer show the higher figure of merit of 2.6×10-4 Ω-1 than that of the IGZO single layer films due to the enhanced opto-electrical performance of the IGZO/Cu bi-layered films.

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Keywords: IGZO, Cu, Optoelectrical, Sputtering