

文献

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Optical and electrical characterization of aluminium doped ZnO layers
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抄録 (Abstract)

Al doped ZnO (ZAO) thin films (with Al-doping levels 2 at.%) were deposited at different deposition parameters on silicon substrate by reactive magnetron sputtering for solar cell contacts, and samples were investigated by transmission electron microscopy (TEM), electron energy loss spectroscopy (EELS) and spectroscopic ellipsometry (SE). Specific resistances were measured by the well known 4-pin method. Well visible columnar structure and in most cases voided other regions were observed at the grain boundaries by TEM. EELS measurements were carried out to characterize the grain boundaries, and the results show spacing voids between columnar grains at samples with high specific resistance, while no spacing voids were observed at highly conductive samples. SE measurements were evaluated by using the analytical expression suggested by Yoshikawa and Adachi [H. Yoshikawa, S. Adachi Japanese Journal of Applied Physics 36 (1997) 6237], and the results show correlation between specific resistance and band gap energy and direct exciton strength parameter. © 2009 Elsevier B.V. All rights reserved.

著者キーワード

Reactive sputtering; Spectroscopic ellipsometry; Structure-property relation; Transparent conductive oxides; Zinc oxide

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