

Electrical and optical properties of Li & P co-doped ZnO thin film by PLD

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Abstract : Fabrication of p-type ZnO has already proven difficult and usually inconsistent despite numerous worldwide efforts. Many research groups studied electrical and optical properties P, Li, As, N single doped ZnO thin film. In P-doped ZnO thin film, the reproducibility of p-type conduction with P_2O_5 as a dopant source was shown to be relatively poor.

In this study, we made P single doped and Li & P co-doped ZnO target. To investigate electrical and optical properties of P single doped and Li & P co-doped ZnO thin film using P_2O_5 and Li_3PO_4 dopant source respectively was deposited by PLD. The growth temperature was changed 500, 700°C and various oxygen partial pressure and post-annealing conditions was changed temperature, different gas ambient(O_2, N_2).

We investigate that how to change electrical and optical properties as function of growth temperature, oxygen partial pressure and post-annealing(RTA).

Key Words : ZnO, p-type, TCOs, PLD