

The Effects of Annealing Temperature on the Characteristics of DC sputtered molybdenum films

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Cu₂ZnSnS₄ (CZTS) thin film solar cells usually use molybdenum back electrodes [1]. It has the good electrical properties of an ohmic-contact, relative stability during the growth of CZTS at the high temperature, and its exquisite adhesion between the glass substrate and the absorber [2]. The electrical and the mechanical properties of sputtered refractory metal films are known to vary with the working gas pressure and sputtering power [2]. This study investigated the characteristic of the Mo films deposited the diverse, using DC magnetron sputter. The electrical and structural properties of the Mo film sputtering various DC power and gas pressure were analyzed in electric resistivity, FESEM, AFM and XRD etc. and an annealing effect of the Mo films in a growth temperature of the general CIGS or CZTS thin films solar cell and upper high degree (>550 °C). The Mo thin film that sputtered with different sputtering conditions in quartz and borosilicate substrate that could process on high heat investigated a thin film property post annealing in 600 ~ 800 °C in Ar atmospherics. As a result, Electric Resistivity was declined in deposition condition of the high DC power and low pressure, and a showed elaborate series of fine grain.

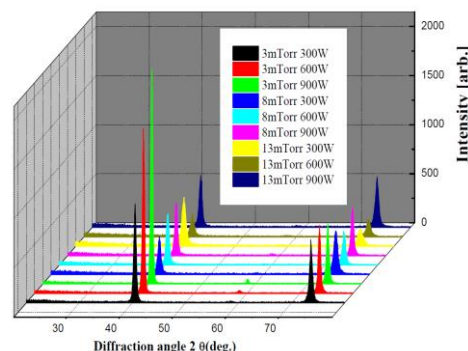


Fig. 1. XRD pattern for films deposited at various working gas pressure at sputtering power

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