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CuAlO 透明導電膜の作製と評価

Fabrication and Evaluation of Transparent Conductive Oxide CuAlO thin films

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Copper and aluninum are important materials for the industry because the cost of these materials have high conductivety, mechanical workability, friendly for environment and the cost of them are less expensive. The copper aluminum oxide is a p-type material that has high conductivity and high transparency[1],[2].

In this experiment, CuAlO thin films were synthesized by sol–gel method methods because this method is easy process to fabricate in large area and use less time for fabricating thin films. The solution for this experiment we choose copper acetate aluminum-trisec-butoxide solution in ethanol, which is friendly for environment. After we deposited thin films, we anneal the films in air pressure for different temperature. In this study, we investigated the surface of thin films by SEM, AFM, and the X-ray diffractometer for studing the phase of CuAlO crystallization, hall measurement for studing the electrical properties, optical properties by UV-vis spectroscopy for analysing the band gap of CuAlO films and ellipsometry for measuring the reflective index of films.

As the result, it was found that the film refractive index was increased as the increase of annealing temperature.

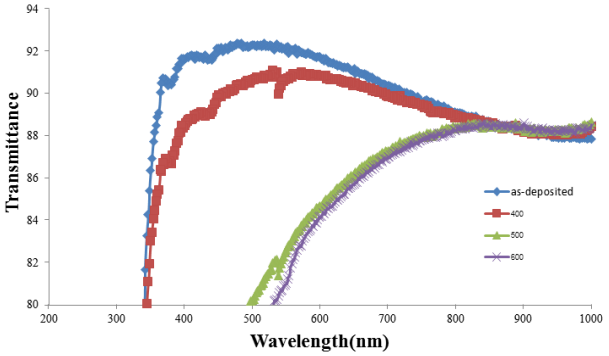

Figure 1. The transparency of copper alunium oxide films with when increase the annealing temperature

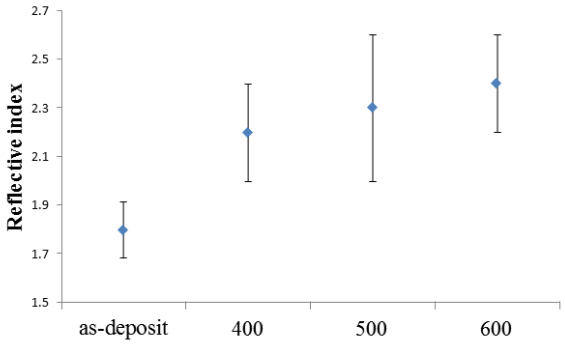

Figure 2. The reflective of copper alunium oxide films with when increase the annealing temperature

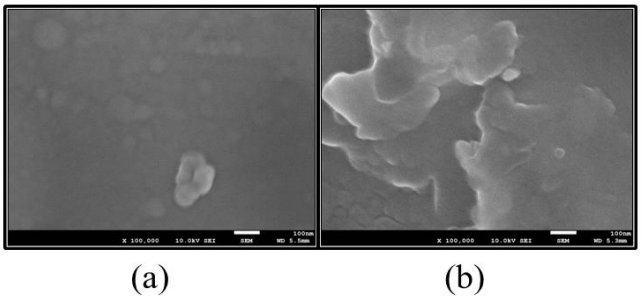

Figure 3. SEM picture of CuAlO film(a) without annealing (b) annealing

<References>

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