

Preparation of Porous Metal Membrane by Thermal Annealing for Thin Film Encapsulation

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Abstract : This paper presents thermal annealing dewetting technique for the preparation of porous metal membrane for thin film encapsulation application. Thermal annealing dewetting experimental results reveal that pore size in porous metal membrane depend upon i.e. 1. The substrate on which metal is deposited for formation of porous metal cap membrane, 2. Melting point of metal used for porous metal cap layer membrane formation, 3. Thickness of metal used for cap layer, 4. Temperature used for porous metal membrane formation. Silver (Ag) was used as a metal for preparation of porous metal membrane by annealing the film at different temperature. Pores in porous silver film were analyzed using Scanning Electron Microscope (SEM). In order to check the usefulness of porous metal film for thin film encapsulation application, the porous silver film prepared on amorphous silicon (a-Si) was release using XeF₂. Finally, guide line and structures are suggested to use this porous membrane for thin film encapsulation (TFE) application.

Keywords : dewetting, thermal annealing, metal, melting point, porous

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