

2005 EDMS, 義守大學, 2005 年 11 月 24-25 日

## **Patterning of ZnO:Al Thin Films**

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### **Abstract**

In this study, we used chemical wet etching to discuss patterning characteristics of AZO films, including etching rates, and etching residue formations of the patterned films. The etching residue and etching rate of the AZO films was examined by a scanning electron microscope (SEM) and Alpha-step, respectively. AZO films were deposited by r.f. magnetron sputtering on the 1737F glass, thickness was 100nm. When the temperature of etchants was 25 to 35±1°C, The fastest etching rate was diluted aqua regia(HNO<sub>3</sub>:HCl:H<sub>2</sub>O=1:4:1000), then 3.4wt.% Oxalic acid and 2.38% TMAH. We suggest the best parameter to etch AZO film at 40±1 2.38%TMAH without stripping °C g, the etching rate was 20.9nm/min and without etching residue on the pattern. The undercut remains on the AZO pattern with etching residue and that causes a wrong size at 25±1°C 3.4 wt.% Oxalic acid and aqua regia when the etching rate is 110nm/min and 388nm/min.

**Key words:** Chemical wet etching;AZO film;Etching rate