

**[23-S03]**

## **The photoelectron microscopy studies on the polycrystalline Cd and Zn surface + O<sub>2</sub> system.**

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The oxidation on the polycrystalline Cd and Zn surface have been investigated with the scanning photoelectron microscope using a HeI radiation source. Recently the combination of high spatial resolution with the measurement of photoelectron energy distribution has the potential to become a powerful tool for the surface science. The scanning photoelectron microscope we developed uses a Fresnel zone plate as a focusing unit forming a focused probe ( $\sim 5$  nm in size) upon the specimen surface. In this work, polycrystalline Cd and Zn surfaces have been imaged during oxidation with molecular oxygen using the scanning photoelectron microscope. The oxide formation on the target surfaces *in situ* appears to be associated with the presence of surface grain structures. Photoelectron images associated with the grain structures were observed in the early stage of oxidation for both samples. The differential reactivity of each different grain surface results in the formation of oxide island features. More reactive grains saturate at lower doses giving bright features and less reactive grains reach saturation later giving uniform coverage. The possibility of usage of the scanning photoelectron microscope using HeI has been demonstrated in this report.