

Abstract Number: O3.7**Day / Time:** Tuesday, Apr. 14, 5:00 PM - 7:00 PM**The Effect of the Annealing Temperature on XANES of Cadmium Sulphide Thin Films.**

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CdS thin films which are popular window materials of solar cells were deposited on glass substrates at 60 °C, and annealed in air at different temperatures. The absorption spectra were measured by secondary phenomena such as sample drain current, so called also as total electron yield (TEY) detection mode. TEY signal was collected for L3 edge of Cd (3538 eV). The measurements were performed at beamline 9.3.1 at ALS. A chemical shift to lower energy with increasing annealing temperature was observed in the Cd L2,3 spectra. The spectra of the films annealed at 373 K and 473 K are completely different from those of the others. The pre-peak growing at around 3554 eV become dominant in the spectra of the films annealed at 373 K and 573 K. Interestingly these films have the lower temperature coefficient of resistivity ($\alpha_{TCR} = -1.75 \times 10^{-3} \text{ K}^{-1}$, between 305 K and 800 K) than the others. There is also some changes in the Sulphur K edge spectra which shows a transition from S 1s to conduction band S 2p-like orbitals due to the dipole selection rule $\Delta l = \pm 1$ for electron excitation.

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