Thermal Stability of Amorphous Zn-In-Sn-O Films

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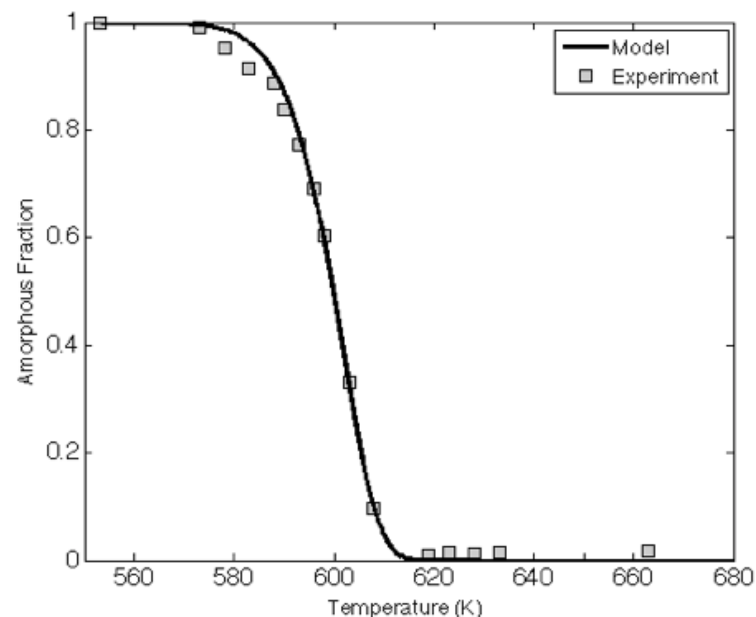
The crystallization process of amorphous ZITO thin films was studied using x-ray diffraction. The resulting intensity peaks can be fit to a classical Johnson-Mehl-Avrami-Kolmorgrov relation for the volume fraction of crystal as a function of time, modified for the constant heating rate of the experiments. The good fit yields a higher activation energy than other amorphous semiconductors and implies that ZITO may be a good replacement for indium tin oxide in applications where the stability of the amorphous phase is important.



Integrated intensity of the amorphous peak as a function of temperature under a constant heating rate of 0.5 C/min. The solid line is the fit to the theory.

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