

Oral Contributions

[MS34] Thin Films

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[MS34-01] Real-time growth analysis of thin film semiconductors by in-situ diffraction and fluorescence Mainz, R.

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Main challenge for the synthesis of thin films is to control the process in such a way that it results in the desired physical properties of the material. In the case of compound semiconductor thin films for solar cells, such as $\text{Cu}(\text{In,Ga})\text{Se}_2$ or $\text{Cu}_2\text{ZnSn}(\text{S},\text{Se}_4)$, it is important to understand and control the evolution of grain size, compositional gradients, diffusion processes, and mechanical stress during synthesis. Synchrotron-based energy-dispersive X-ray diffraction and fluorescence analysis (EDXRD/XRF) and their combined evaluation offers unique possibilities for the investigation of the interplay between process conditions and the evolution of structural properties in real time. The method provides valuable insights into the reactions taking place during thin film growth under relevant production conditions.