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Synthesis and x-ray characterization of Cesium Telluride photocathodes

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Cesium telluride (CsTe) photocathodes has been the first hand choice for electron sources by worldwide accelerators, due to its high quantum yield, stable performance at complicated operation environment and long lifetime. In this work we compared the results of in situ x-ray characterization of the traditional sequential and co-evaporation growth of CsTe photocathodes. We were able to achieve ~2nm surface roughness, high crystallinity and a quantum efficacy of 18 % at 266 nm wavelength.

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