

## Abstract

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### **Synthesis and Characterization of Mixed Cesium-Methylammonium Lead Bromide Single Crystals**

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Halide perovskites ( $APbX_3$ ) are an intriguing group of optoelectronic materials, due, in part, to their remarkably high open circuit voltages. These voltages make them relevant for use in photovoltaic solar cells as, for instance, a high photo energy-absorbing component in a tandem solar cell configuration. In this context, two types of high bandgap  $X=Br$  perovskites are of special interest: The Cubic hybrid organic–inorganic Methylammonium lead bromide perovskite ( $MAPbBr_3$ ) and its orthorhombic, all inorganic analog,  $CsPbBr_3$ .  $MAPbBr_3$  Shows somewhat better open circuit voltages than  $CsPbBr_3$  which is, in turn, more stable. To understand the role of the A group (i.e. organic vs. in-organic) and its influence on these desirable properties, fundamental studies of **mixed single crystals with both the organic MA and inorganic Cs cations** are needed. We present first results of the growth of such crystals with varying Cs/methylammonium (Cs/MA) ratios, and their characterization using structural and compositional techniques.