

**Au - Decorated ZnO Nanorod Arrays for Mixed-cation Lead Mixed-halide Perovskite
Photovoltaics**

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Abstract

We fabricated ZnO nanorods decorated with Au nanoparticles for electron transport layers in perovskite solar cells. We compared the performance of double : Cs/ FA and triple : Cs/FA/MA cation with mixed double halide : I/ Br perovskite layers in this configuration . The current-voltage characteristics and impedance spectra indicate that Au improves charge extraction in the devices, confirmed by changes in the photoluminescence spectra. The use of Au particles in the solar cells resulted in an increase in power conversion efficiency from 11.52 % to 12.62 % (double cation) and from 11.9 % to 12.66 % (triple cation).