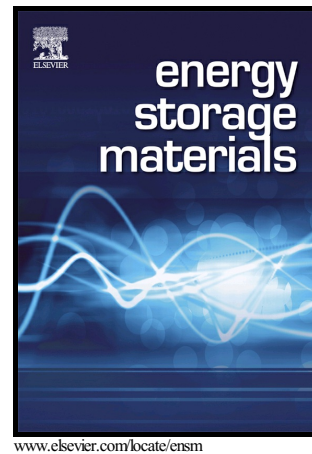


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Lu Wang, Guo-Ran Li, Qian Zhao, Xue-Ping Gao



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Non-precious transition metals as counter electrode of perovskite solar cells

Lu Wang,^a Guo-Ran Li,^{a*} Qian Zhao,^a and Xue-Ping Gao^{*a,b}

^a Institute of New Energy Material Chemistry, School of Materials Science and Engineering, National Institute for Advanced Materials, Nankai University, Tianjin 300350, China, E-mail: guoranli@nankai.edu.cn; xpgao@nankai.edu.cn

^b Collaborative Innovation Center of Chemical Science and Engineering (Tianjin), Tianjin Key Laboratory of Metal and Molecule Based Material Chemistry, China

Abstract

Usually, perovskite solar cells employ gold or silver as counter electrode materials. The use of the precious metals is a serious obstacle to the practical application of perovskite solar cells. In this work, low-cost non-precious transition metals are investigated to replace gold or silver as counter electrode materials in perovskite solar cells. Under optimized conditions, perovskite solar cells with Cu, Ni, W, and Mo films, prepared by magnetron sputtering deposition, present satisfactory performance with the power conversion efficiency of 13.04, 12.18, 12.38, and 11.38%, respectively, as compared with that (15.97%) of the perovskite solar cell with Ag counter electrode. Even though a slightly loss in efficiency, these non-precious transition metals are the promising candidates to the counter electrode of perovskite solar cells on the aspect of the practicality and cost performance ratio.

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