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Collosal figure of merit of transparent conducting nano-ribbon networks JINWEI GAO, QIANG PENG, SONGRU LI, BING HAN, QIKUN RONG, XUBING LU, GUOFU ZHOU, South China Normal University, Guangzhou, China, JUN-MING LIU, Nanjing University, Nanjing, China, QIANMING WANG, South China Normal University, Guangzhou, China, ZHIFENG REN, University of Houston, Houston, USA, KRZYSZTOF KEMPA, Boston College — An inexpensive, simultaneously transparent and conducting metallic nano-ribbon network can be obtained by exploiting the self-cracking property of the egg-white film, subsequently used as a sacrificial mask for metal sputtering. The process results in a network of metallic nano-ribbons ideally suited for electroplating. Due to large inter-ribon distance, an even 100-fold increase in the ribbon thickness has a negligible effect on the network transparency. Here we demonstrate this effect by developing a network with a colossal, by far the highest reported figure of merit of over 25000. This network can be used as an ultimate window electrode for solar cells, as well as LEDs.

Jiantao Kong
Boston College

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