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**Graphene-oxide doped PEDOT: PSS as a superior whole transport material for high-efficiency perovskite solar cell**Shengzhong Frank Liu<sup>1,2</sup>, Jinzhi Niu<sup>1</sup>, Dong Yang<sup>1</sup>, Xiaodong Ren<sup>1</sup>, Zhou Yang<sup>1</sup>, Yucheng Liu<sup>1</sup> and Wangen Zhao<sup>1</sup><sup>1</sup>Shaanxi Normal University, China<sup>2</sup>Chinese Academy of Sciences, China

Organometal perovskite has turned into a promising candidate material for next generation solar cells due to its high power conversion efficiency and low-cost processing. Herein we report a superior whole transport material (HTM) for significantly improved solar cell efficiency. Upon doing the commonly used PEDOT:PSS HTM by graphene oxide (GO), its hole mobility is increased from  $5.55 \times 10^{-5}$  to  $1.57 \times 10^{-4}$  cm<sup>2</sup>V<sup>-1</sup>s<sup>-1</sup>, leading to efficient hole extraction and low current leakage, therefore 20% higher power conversion efficiency comparing to the control device without the GO doping. The development open the opportunities for efficient HTMs based on the two-dimensional materials in the perovskite solar cells.

**Biography**

Shengzhong Frank Liu is currently a Professor at Shaanxi Normal University and Dalian Institute of Chemical Physics, Chinese Academy of Science. After receiving his PhD in 1992, from Northwestern University (USA), he worked in US for about 20 years in companies including United Solar, BP Solar and Argonne National Laboratory. He recently accepted Professorship in China and started to build up his research labs in Xi'an and Dalian. His research interests include nanoscale materials, thin film materials, solar energy materials, electrochemical deposition, and development of photovoltaic technologies.

liusz@snnu.edu.cn

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