自然科学奖公示内容

1. 成果名称

高性能钙钛矿太阳能电池的开发

1. 提名等级

自然科学奖一等奖

1. 代表性论文专著目录

**1.** Chang Liu, Yi-Bing Cheng, Ziyi Ge. Understanding of Perovskite Crystal Growth and Film Formation in Scalable Deposition Processes. *Chemical Society Reviews*. 2020, 49, 1653-1687. DOI:10.1039/c9cs00711c

**2.** Qiang Lou, Yufang Han, Chang Liu, Kanghui Zheng, Jinsheng Zhang, Xia Chen, Qing Du, Chong Chen, Ziyi Ge. π-Conjugated Small Molecules Modified SnO2 Layer for Perovskite Solar Cells with over 23% Efficiency. *Advanced Energy Materials*. 2021, 11, 2101416. DOI: 10.1002/aenm.202101416

**3.** Like Huang, Danli Zhang, Shixiao Bu, Ruixiang Peng, Qiang Wei, Ziyi Ge. Synergistic Interface Energy Band Alignment Optimization and Defect Passivation toward Efficient and Simple-Structured Perovskite Solar Cell. *Advanced Science*. 2020, 7, 1902656. DOI:10.1002/advs.201902656

**4.** Chang Liu, Jingsong Sun, Wen Liang Tan, Jianfeng Lu, Thomas R. Gengenbach, Christopher R. McNeill, Ziyi Ge, Yi-Bing Cheng, Udo Bach. Alkali Cation Doping for Improving the Structural Stability of 2D Perovskite in 3D/2D PSCs. *Nano Letters*. 2020,20(2), 1240-1251. DOI:10.1021/acs.nanolett.9b04661

**5.** Pengyu Yan, Daobin Yang, Hongqian Wang, Shuncheng Yang, Ziyi Ge. Recent advances in dopant-free organic hole-transporting materials for efficient, stable and low-cost perovskite solar cells. *Energy & Environmental Science*. 2022, 15, 3630-3669. DOI:10.1039/d2ee01256a

**6.** Lisha Xie, Songyu Du, Jun Li, Chang Liu, Zhenwei Pu, Xinyu Tong, Jian Liu, Yaohua Wang, Yuanyuan Meng, Mengjin Yang, Wei Li, Ziyi Ge. Molecular dipole engineering-assisted strain release for mechanically robust flexible perovskite solar cells. *Energy & Environmental Science*. 2023, 16, 5423-5433. DOI: 10.1039/d3ee02569a

**7.** Yuanyuan Meng, Chang Liu, Ruikun Cao, Jiasen Zhang, Lin Xie, Mengjin Yang, Lisha Xie, Yaohua Wang, Xu Yin, Cuirong Liu, Ziyi Ge. Pre-Buried ETL with Bottom-Up Strategy Toward Flexible Perovskite Solar Cells with Efficiency Over 23%. *Advanced Functional Materials*. 2023, 33, 2214788. DOI: 10.1002/adfm.202214788

**8.** Lisha Xie, Jian Liu, Jun Li, Chang Liu, Zhenwei Pu, Peng Xu, Yaohua Wang, Yuanyuan Meng, Mengjin Yang, Ziyi Ge. A Deformable Additive on Defects Passivation and Phase Segregation Inhibition Enables the Efficiency of Inverted Perovskite Solar Cells over 24%. *Advanced Materials*. 2023, 35, 2302752. DOI: 10.1002/adma.202302752

**9.** Bin Han, Yaohua Wang, Chang Liu, Kexuan Sun, Mengjin Yang, Lisha Xie, Shuncheng Yang, Yuanyuan Meng, Shuyuan Lin, Peng Xu, Jun Li, Qingqing Qiu, Ziyi Ge. Rational Design of Ferroelectric 2D Perovskite for Improving the Efficiency of Flexible Perovskite Solar Cells Over 23 %. *Angewandte Chemie International Edition*. 2023, 62(8): e202217526. DOI: 10.1002/anie.202217526

**10.** Chang Liu, Zhi Fang, Jingsong Sun, Qiang Lou, Jinfeng Ge, Xia Chen, Erjun Zhou, Ming-Hui Shang, Weiyou Yang, Ziyi Ge. Imidazolium Ionic Liquid as Organic Spacer for Tuning the Excitonic Structure of 2D Perovskite Materials. *ACS Energy Letters*. 2020, 5(11): 3617-3627. DOI: 10.1021/acsenergylett.0c01784

四、主要知识产权和标准规范目录

无

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