



2024 「中技社科技獎學金」

2024 CTCI Foundation Science and Technology Scholarship

境外生生活助學金

Living Grant for International Graduate Students

Developing Device Designs for Advancing Optoelectronic Applications



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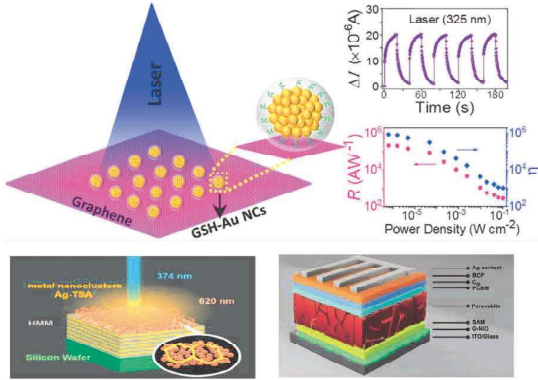


Abstract

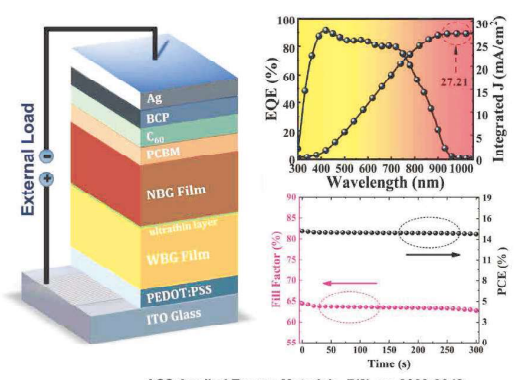
Our research focuses on designing advanced optoelectronic devices to enhance semiconductor technologies. By developing novel material architectures and scalable fabrication methods, we aim to enhance the performance of solar cells, photodetectors, and other optoelectronic devices. These advancements are crucial for energy-efficient solutions, communication technologies, and green energy applications. In our current work, we have introduced a high-efficiency perovskite solar cells with an innovative transfer printing technique having >15% efficiency for large-area integration. Also, by integrating gold nanoclusters with graphene, a improved photodetector sensitivity to 10^6 A/W on flexible substrates have been investigated by our team. In collaborative work, I have participated in design of random lasing that enhances energy-efficient light emission, optically encodable non-volatile memory devices and phototransistors. These innovative device design technique can drive sustainable energy solutions and technological advancements in semiconductors.

Research Focus

❖ Photodetector Applications



❖ Solar Cells Applications

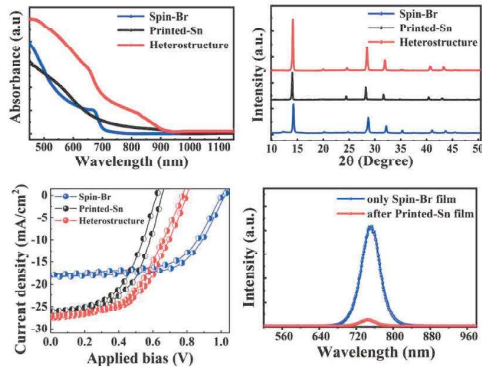


ACS Photonics, 2021, 8(10), pp.2955-2965

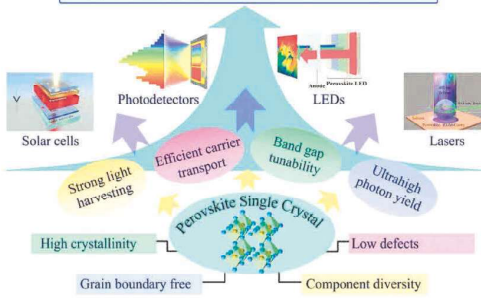
ACS Applied Energy Materials, 7(8), pp.3039-3048

Results & Discussion

❖ Photovoltaic Performance

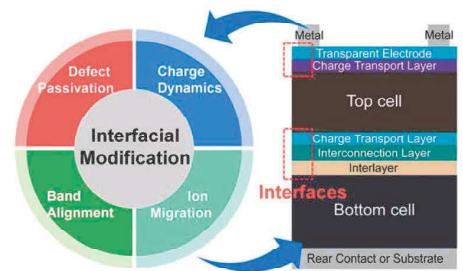


Efficient, stable, integrated and optoelectronic devices

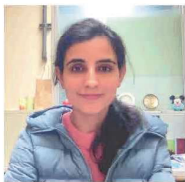


10.1002/smtd.202400709

❖ Interface Engineering



Awards & Recognition



- ❖ Gold Medal Award, Junior Scientist Award, RCAS, Academia Sinica (2024)
- ❖ Taiwan International Graduate Program (TIGP) NANO-Program Scholarship, Academia Sinica (2019)
- ❖ Finalist in MST/NANO/SCST Joint Poster Contest, Academia Sinica (2023)
- ❖ Awarded Honorable Mention, Academia Sinica Photo Contest (2024)
- ❖ Member of American Physical Society (APS)
- ❖ Member of Material Research Society (MRS)
- ❖ Published 2 first-author research papers and co-authored 2 additional papers



Advisor's



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