Curriculum Vitae

Shanshan Zhang

Birthday: February 6th 1984
Birth place: Beijing, China
Nationality: China
Gender: Female
Tel:+13269725039
E-Mail:
shanshan.zhang1@uqconnect.edu.au
shine8426@gmail.com

Research Interests:

Optoelectronics Devices, Organic-Inorganic Hydride Materials, Solid states physics

Educational Background &Working experience:

11/2019-Current: Research assistant (temp) Tsinghua University, School of Materials Science and Engineering, China

10/2015-02/2020: Postgraduate Study (PhD), Perovskite Solar Cells: Working Principles, Materials and Interfaces, University of Queensland, Australia

-04/2017-08/2018: University of Potsdam, Soft Matter Physics, Visiting scholar

09/2011-12/2014: The China Association for Science and Technology (Research Assistant)

09/2008-06/2011: Master Program in Chemistry, Department of Biochemistry and Organic Chemistry, Uppsala University, Sweden

-03/2010-11/2010: Graduation thesis: High-porosity materials- MOFs synthesis and Application, Department of Chemistry University of Toronto, Canada

12/2007-06/2008: China Hewlett-Packard Co., Ltd (Contract administrator)

07/2006-10/2007: Beijing Tongrentang Pharmaceutical Co., Ltd. (Quality Control Specialist)

09/2002-07/2006: Bachelor degree of Nature Science, Applied Chemistry, Beijing Institute of Petrochemical Technology, China

Research experience:

- University of Queensland & University of Potsdam

  Planar inverted Perovskite Solar Cells: Working Principles, Materials and Interfaces

  Work on high efficient 3D and 2D *p-i-n* perovskite solar cell

  Study on fundamental device physics, free energy losses and charge recombination processes

  Fabricated 1cm^2 3D *p-i-n* device with stabilized PCE of 19.22% was certified by Institute for Solar Energy, Fraunhofer Freiburg.

  Research aspects:

  - Surface energy modification of hole-transporting layers for high efficient 3D *p-i-n* perovskite devices
  - Studies on mechanisms of non-radiative recombination at Perovskite/Transporting layers,

in neat perovskite layers (Bulk) and the whole devices

- Studies on charge generation and recombination in 2D perovskites
- Studies on defect physics of lead halide perovskites and its impact on the device performance

Master Tutorial：Advanced Physics Lab Course- M7 Electroluminescence of polymers (organic light-emitting diode)

- Tsinghua University, School of Materials Science And Engineering: Design Cobalt Polypyridine Redox Mediators for Dye-Sensitized Solar Cells and Quantum-dot Sensitized Solar Cells; Perovskite- Based solar cells.
- Uppsala University and University of Toronto (Master thesis project): High-porosity materials-MOFs synthesis and Application. The project including ligands design and synthesis, MOFs design and synthesis, MOFs material characterization, lanthanide MOFs luminescence studies, MOFs sensor design. MOFs tested as a homogeneous catalyst for the Intermolecular Redox Amination.

Technical Skills:

- Material Characterization: XPS, SEM, AFM, SKPFM, X-ray, XRD，UV-visible spectra, gas absorption, Steady-state photoluminescence (PL) (Absolute PL and temperature dependent PL), Transient photoluminescence (TRPL), Conductivity measurements (thick or thin films)
- Semiconductor device: IPCE, Current-voltage (IV), SCLC, CELIVs, Intensity dependent photocurrent (IPC), integral time of flight (iTOF), Resistance dependent photovoltage (RPV), Time delayed collection field (TDCF) measurements.
- Data analysis: Origin &MATLAB

Publication:

[1] **Shanshan Zhang**,* Christian M. Wolff, Paul Meredith, Paul L. Burn, Dieter Neher and Martin Stolterfoht* Defect/interface recombination limited quasi-Fermi level splitting and open-circuit voltage in mono- and triple cation perovskites solar cells**.** ***ACS Appl. Mater. Interfaces. In press***

[2] **Shanshan Zhang**, Seyed Mehrdad Hosseini, René Gunder, Petsiuk, Andrei, Pietro Caprioglio, Christian M. Wolff, Safa Shoaee, Paul Meredith, Susan Schorr, Thomas Unold, Paul L. Burn, Dieter Neher, Martin Stolterfoht* Bulk, interface and charge transport loss mechanisms in high efficiency low dimensional perovskite solar cells, ***Adv. Mater***, 2019. 10.1002/adma.201901090

[3] **Shanshan Zhang**, Martin Stolterfoht, Ardalan Armin, Qianqian Lin, Fengshuo Zu, Jan Sobus, Hui Jin, Norbert Koch, Paul Meredith, Paul L. Burn*, and Dieter Neher* Interface Engineering of Solution-Processed Hybrid Organohalide Perovskite Solar Cells, ***ACS Appl. Mater. Interfaces***, 2018, 10(25), pp 21681–21687

[4] Martin Stolterfoht,* Max Grischek, Pietro Caprioglio, Christian M. Wolff, Emilio Gutierrez-Partida, Francisco Peña-Camargo, Daniel Rothhardt, **Shanshan Zhang**, Meysam Raoufi, Jakob Wolansky, Mojtaba Abdi-Jalebi, Samuel D. Stranks, Steve Albrecht, Thomas Kirchartz, and Dieter Neher. How To Quantify the Efficiency Potential of Neat Perovskite Films: Perovskite Semiconductors with an Implied Efficiency Exceeding 28%. ***Adv. Mater***, 2020, 32, 2000080

[5] Martin Stolterfoht, Pietro Caprioglio, Christian Michael Wolff, José Antonio Márquez Prieto, Joleik Nordmann, **Shanshan Zhang**, Daniel Rothhardt, Ulrich Hörmann, Yohai Amir, Alex Redinger, Lukas Kegelmann, Fengshuo Zu, Steve Albrecht, Norbert Koch, Thomas Kirchartz,

Michael Saliba, Thomas Unold* and Dieter Neher* The impact of energy alignment and interfacial recombination on the open-circuit voltage of perovskite solar cells, ***Energy & Environmental Science,*** 2019. doi: 10.1039/C9EE02020A

[6] Martin Stolterfoht, Christian M. Wolff, José A. Márquez, **Shanshan Zhang**, Charles J. Hages, Daniel Rothhardt, Steve Albrecht, Paul L. Burn, Paul Meredith, Thomas Unold , and Dieter Neher* Visualization and suppression of interfacial recombination for high-efficiency large-area pin perovskite solar cells, ***Nature energy***, 2018, 3, pp 847–854

[7] Qianqian Lin, Wei Jiang, **Shanshan Zhang**, Ravi Chandra Raju Nagiri , Hui Jin, Paul L. Burn* , and Paul Meredith* A Triarylamine-Based Anode Modifier for Efficient Organohalide Perovskite Solar Cells, ***ACS Appl. Mater. Interfaces***, 2017, 9 (10), pp 9096–91013.

[8] Heping Shen, Jianbao Li, Lin Zhao, **Shanshan Zhang**, Wenli Wang, Dan Oron and Hong Lin* Synergistic recombination suppression by an inorganic layer and organic dye molecules in highly photostable quantum dot sensitized solar cells ***Phys. Chem. Chem. Phys***, 2014,16, 6250-6256.

[9].Yu Li, **Shanshan Zhang**, and Datong Song* A Luminescent Metal–Organic Framework as a Turn- On Sensor for DMF Vapor, ***Angewandte Chemie International Edition*** (2013), 52,710-713.

Referees:

Prof. Paul Meredith

Department of Physics, Swansea University, Singleton Park, Swansea SA2 8PP Wales, United Kingdom; University of Queensland, Australia

E-mail: paul.meredith@swansea.ac.uk / meredith@physics.uq.edu.au

Dr. Martin Stolterfoht

Institute of Physics and Astronomy, University of Potsdam, Karl-Liebknecht-Str.24-25,D-14476 Potsdam-Golm, Germany

E-mail: stolterf@uni-potsdam.de

Prof. Hong Lin

School of Materials Science and Engineering, Tsinghua University, Beijing 100084, P.R.China

E-mail: hong-lin@tsinghua.edu.cn