Professor SUN, BAOQUAN
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Academic Qualification
Ph.D. in Chemistry Materials, Department of Chemistry, Tsinghua University, Beijing, China
Bachelor in Qingdao University of Science and Technology, Qingdao, China

Teaching Area
Inorganic chemistry
Semiconductor physics
New energy and materials
Selected topics in electrical materials

Research Area
Energy materials and their related device, silicon solar cell, light converting materials.
Morphology and phase control of polymer/inorganic materials.
Flexible electronics, conducting ink.
Charge separation and transport in organic/inorganic hybrid composites.
Fabrication and characterization of solution-processed light-emitting diodes and solar cells, thin film transistor.
Optoelectronic properties of organic/nanostructured semiconductor devices.
Interface/surface chemistry and physics of organic/inorganic semiconductor.

Professional Services
2015-present, Advisory Editorial Board, Physica Status Solidi A, B,C&RRL (IF:1.349-2.815) Publisher: WILEY-VCH Verlag GmbH & Co. KGaA, Germany
2020 present, Editorial Board Members, Frontiers in Electronics, Switzerland

Working Experience
2002.8-2007.4 Research Associate in Optoelectronics, Cavendish Laboratory (Physics), Cambridge University (Advisor Sir Richard Friend), Cambridge, United Kingdom
2007.5-2009.01 Research Scientist in C-PCS, Los Alamos National Laboratory (Hosted by Dr. Victor Klimov), NM, USA
2009.01-Present Professor in Institute of Functional Nano & Soft Materials (FUNSOM), Soochow University, Suzhou, China
2021.01-Present Professor in Institute of Materials Science and Engineering, Macau University of Science and Technology, Macau, China

Academic Publication

200 "SCI" indexed articles with more than 20,000 citations, H-index=73

(selected 2023-2025)(1-13)

1. Shao B, Lu M-H, Wu T-C, Peng W-C, Ko T-Y, Hsiao Y-C, Chen J-Y, Sun B, Liu R, Lai Y-C. Large-area, untethered, metamorphic, and omnidirectionally stretchable multiplexing self-powered triboelectric skins. Nature Communications. 2024;15(1):1238.
2. Wang Y, Yuan X, Ni K, Song Y, Li X, Zeng X, Shao B, Sun B. 3D dendritic hierarchically gradient nanoflowers in situ grown on conductive substrates for efficient hydrovoltaic power generation. Energy & Environmental Science. 2024;17(13):4780-93.
3. Zeng X, Ding Y, Yuan X, Jiang C, Wang Y, Song Y, Li Y, Shao B, Wang Y, Sun B. Photo-Mediated Cascade Growth of Ag Nanocrystals in Flow Reactors for High-Performance Flexible Transparent Electrodes. Advanced Functional Materials. 2024;34(8):2309730.
4. Shao B, Lu T-C, Lu M-H, Chen Y-T, Wu T-C, Peng W-C, Ko T-Y, Chen J-Y, Sun B, Chen C-Y, Liu R, Hsu F-C, Lai Y-C. Efficient Permeable Monolithic Hybrid Tribo-Piezo-Electromagnetic Nanogenerator Based on Topological-Insulator-Composite. Advanced Materials. 2024;36(41):2408936.

5. Zhang J, Wang J, Cai L, Wang S, Wu K, Sun B, Zheng W, Kershaw SV, Jia G, Zhang X, Rogach AL, Yang X. Fine-Tuning Crystal Structures of Lead Bromide Perovskite Nanocrystals through Trace Cadmium(II) Doping for Efficient Color-Saturated Green LEDs. Angewandte Chemie International Edition. 2024;63(26):e202403996.
6. Duan W, Shao B, Wang Z, Ni K, Liu S, Yuan X, Wang Y, Sun B, Zhang X, Liu R. Silicon nanowire/ionic hydrogel-based hybrid moist-electric generators with enhanced voltage output and operational stability. Energy & Environmental Science. 2024;17(11):3788-96.
7. Zhan W, Liu M, Wan Q, He M, Zhang Q, Liao X, Yuan C, Kong L, Wang Y, Sun B, Brovelli S, Li L. Fluorine Passivation Inhibits “Particle Talking” Behaviors under Thermal and Electrical Conditions of Pure Blue Mixed Halide Perovskite Nanocrystals. Small. 2023;19(44):2304829.
8. Yuan X, Bai G, Wang Y, Zeng X, Shao B, Wang Y, Sun B. Mapping Capillary Infiltration-Induced Potential in Water-Triggered Electric Generator Using an Electrical Probe Integrated Microscope. Small. 2023;n/a(n/a):e2307201.
9. Song Z, Ge C, Song Y, Chen Z, Shao B, Yuan X, Chen J, Xu D, Song T, Fang J, Wang Y, Sun B. Synergistic Solar-Driven Freshwater Generation and Electricity Output Empowered by Wafer-Scale Nanostructured Silicon. Small. 2023;19(4):2205265.
10. Song Y, Song Z, Jiang C, Xing C, Zeng X, Zhang Z, Chen Z, Song T, Shao B, Wang Y, Sun B. Ferroelectric Layer-Assisted Asymmetric Heterojunction Boosts Power Output in Silicon Hydrovoltaic Device. Adv Energy Mater. 2023;13(48):2302765.
11. Shao B, Song Y, Song Z, Wang Y, Wang Y, Liu R, Sun B. Electricity Generation from Phase Transitions between Liquid and Gaseous Water. Adv Energy Mater. 2023;13(16):2204091.
12. Ni K, Xu B, Wang Z, Ren Q, Gu W, Sun B, Liu R, Zhang X. Ion-Diode-Like Heterojunction for Improving Electricity Generation from Water Droplets by Capillary Infiltration. Advanced Materials. 2023;35(40):2305438.
13. Jiang C, Zhang G, Hong Z, Chen J, Li Y, Yuan X, Lin Y, Yu C, Wang T, Song T, Wang Y, Sun B. Colored Silicon Heterojunction Solar Cells Exceeding 23.5% Efficiency Enabled by Luminescent Down-Shift Quantum Dots. Advanced Materials. 2023;35(6):e2208042.

Research Grants

2021.10 -- 2024.11 Unveiling the Degradation Mechanism of Perovskite Light-Emitting Diodes From Molecular Insight and Development of Efficient and Stable Devices (FDCT, 0044/2021/A)
2022.10 -- 2025.10 Highly stable blue quantum dots with narrow emission width and theirelectroluminescence devices (FDCT, 0017/2022/AGJ)
2023.10 -- 2026.110 Highly stable quantum dots for high resolution display application and their demonstrations in Microdisplays (FDCT, (0005/2022/AKP)