

# BIN CHEN

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## EDUCATION

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<b>Arizona State University</b> , Tempe, AZ Ph.D. Materials Science and Engineering	2014 – 2018
<b>Fuzhou University</b> , China B.Eng. Materials Science and Engineering	2010 – 2014

## RESEARCH EXPERIENCE

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<b>Northwestern University</b> , Evanston, IL Associate Director, TEAMUP Consortium Research: Tandems for Efficient and Advanced Modules using Ultrastable Perovskites	2024 – present
<b>Northwestern University</b> , Evanston, IL Research Associate Professor, Department of Chemistry; Department of Electrical & Computer Engineering Research: Emerging semiconductors for solar and sensing applications	2024 – present
<b>Northwestern University</b> , Evanston, IL Research Assistant Professor, Department of Chemistry; Department of Electrical & Computer Engineering Research: Emerging semiconductors for solar and sensing applications	2022 – 2024
<b>University of Toronto</b> , Canada Postdoctoral Fellow, Department of Electrical & Computer Engineering Advisor: Prof. Ted Sargent Research: Perovskite-based tandem solar cells and quantum dot infrared photodetectors	2018 – 2022
<b>Arizona State University</b> , Tempe, AZ Graduate Research Associate, School for Engineering of Matter, Transport & Energy Advisor: Prof. Sefaattin Tongay Dissertation: Atomic Scale Characterizations of Two-dimensional Anisotropic Materials and Their Heterostructures Committee Members: Prof. Sefaattin Tongay, Prof. Mariana Bertoni, Prof. Shery Chang	2014 – 2018

## RESEARCH INTERESTS

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Our research group is dedicated to designing innovative energy materials and investigating nano-scale processes within these materials and devices. By integrating principles from physics, chemistry, and materials science, we employ advanced microscopy and spectroscopy techniques for detailed characterization. Our goal is to advance energy technologies and contribute to a sustainable future through cutting-edge research and interdisciplinary collaboration.

## SELECTED PUBLICATIONS

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† equal contribution, \* corresponding

18. Yi Yang, Hao Chen, Cheng Liu, Jian Xu, Chuying Huang, Chris D. Malliakas, Haoyue Wan, Abdulaziz S. R. Bati, Zaiwei Wang, Robert P. Reynolds, Isaiah W. Gilley, Shuta Kitade, Taylor E. Wiggins, Stefan Zeiske, Selengesuren Suragtkhuu, Munkhbayar Batmunkh, Lin X. Chen, **Bin Chen\***, Mercouri G. Kanatzidis\*, Edward H. Sargent\* Amidination of passivating ligands increases operating stability in perovskite solar cells (Submitted)

17. Li, C.†; Chen, L.†; Jiang, F.†; Song, Z.†; Wang, X.; Ugur, E.; Balvanz, A.; Hu, J.; Park, S.; Maxwell, A.; Chen, H.; Liu, Y.; Wang, Z.; Xia, P.; Li, Y.; Fu, S.; Sun, N.; Grice, C. R.; Wu, X.; Fink, Z.; Zeng, L.; Jung, E.; Wang, J.; Grater, L.; Kopilovic, D.; Luo, D.; Liu, J.; Hu, Q.; Chen, C.; Shen, J.; Han, Y.; Perini, C. A. R.; Correa-Baena, J.; Lu, Z.; Russell, T. P.; De Wolf, S.; Kanatzidis, M. G.; Ginger, D. S.; **Chen, B.\***; Yan, Y.\*; Sargent, E. H.\* Diamine Chelates for Increased Stability in Mixed Sn–Pb and All-Perovskite Tandem Solar Cells. *Nature Energy* 2024 (Accepted)
16. Chen, H.†; Liu, C.†; Xu, J.†; Maxwell, A.†; Zhou, W.†; Yang, Y.; Zhou, Q.; Bati, A. S. R.; Wan, H.; Wang, Z.; Zeng, L.; Wang, J.; Serles, P.; Liu, Y.; Teale, S.; Liu, Y.; Saidaminov, M.; Hoogland, S.; Filleter, T.; Kanatzidis, M. G.; **Chen, B.\***; Ning Z\*; Sargent, E. H.\* Improved charge extraction in inverted perovskite solar cells with dual-site-binding ligands. *Science* 2024, 384 (6692), 189–193.
15. Xu, J.; Maxwell, A.; Song, Z.; Bati, A. S. R.; Chen, H.; Li, C.; Park, S. M.; Yan, Y.; **Chen, B.\***; Sargent, E. H.\* The Dynamic Adsorption Affinity of Ligands Is a Surrogate for the Passivation of Surface Defects. *Nat. Commun.* 2024, 15 (1), 2035.
14. Maxwell, A.†; Chen, H.†; Grater, L.; Li, C.; Teale, S.; Wang, J.; Zeng, L.; Wang, Z.; Park, S. M.; Vafaie, M.; Sidhik, S.; Metcalf, I. W.; Liu, Y.; Mohite, A. D.; **Chen, B.\***; Sargent, E. H.\* All-Perovskite Tandems Enabled by Surface Anchoring of Long-Chain Amphiphilic Ligands. *ACS Energy Lett.* 2024, 520–527.
13. Yang, Y.†; Liu, C.†; Ding, Y.†; Ding, B.†; Xu, J.†; Liu, A.; Yu, J.; Grater, L.; Zhu, H.; Hadke, S. S.; Sangwan, V. K.; Bati, A. S. R.; Hu, X.; Li, J.; Park, S. M.; Hersam, M. C.; **Chen, B.\***; Nazeeruddin, M. K.\*; Kanatzidis, M. G.\*; Sargent, E. H.\* A Thermotropic Liquid Crystal Enables Efficient and Stable Perovskite Solar Modules. *Nat. Energy* 2024, 1–8.
12. Liu, C.†; Yang, Y.†; Chen, H.†; Xu, J.†; Liu, A.†; Bati, A. S. R.; Zhu, H.; Grater, L.; Hadke, S. S.; Huang, C.; Sangwan, V. K.; Cai, T.; Shin, D.; Chen, L. X.; Hersam, M. C.; Mirkin, C. A.; **Chen, B.\***; Kanatzidis, M. G.\*; Sargent, E. H.\* Bimolecularly-passivated interface enables efficient and stable inverted perovskite solar cells, *Science* 2023, 382 (6672), 810–815.
11. Liu, Y.†; Zhu, T.†; Grater, L.†; Chen, H.†; Reis, R.; Maxwell, A.; Cheng, M.; Dong, Y.; Teale, S.; Leontowich, A. F. G.; Kim, C.; Chan, P. T.; Wang, M.; Paritmongkol, W.; Gao, Y.; Park, S.; Xu, J.; Khan, J. I.; Laquai, F.; Walker, G. C.; Dravid, V. P.; **Chen, B.\***; Sargent, E. H.\* A Three-Dimensional Quantum Dot Network Stabilizes Perovskite Solids via Hydrostatic Strain. *Matter* 2024, 7 (1), 107–122.
10. Chen, H.†; Maxwell, A.†; Li, C.†; Teale, S.†; **Chen, B.†**; Zhu, T.; Ugur, E.; Harrison, G.; Grater, L.; Wang, J.; Wang, Z.; Zeng, L.; Park, S. M.; Chen, L.; Serles, P.; Awni, R. A.; Subedi, B.; Zheng, X.; Xiao, C.; Podraza, N. J.; Filleter, T.; Liu, C.; Yang, Y.; Luther, J. M.; De Wolf, S.; Kanatzidis, M. G.; Yan, Y.; Sargent, E. H. Regulating Surface Potential Maximizes Voltage in All-Perovskite Tandems. *Nature* 2023, 613 (7945), 676–681.
9. Chen, H.†; Teale, S.†; **Chen, B.†**; Hou, Y.†; Grater, L.; Zhu, T.; Bertens, K.; Park, S. M.; Atapattu, H. R.; Gao, Y.; Wei, M.; Johnston, A. K.; Zhou, Q.; Xu, K.; Yu, D.; Han, C.; Cui, T.; Jung, E. H.; Zhou, C.; Zhou, W.; Proppe, A. H.; Hoogland, S.; Laquai, F.; Filleter, T.; Graham, K. R.; Ning, Z.; Sargent, E. H. Quantum-Size-Tuned Heterostructures Enable Efficient and Stable Inverted Perovskite Solar Cells. *Nat. Photonics* 2022, 16 (5), 352–358.
8. **Chen, B.**; Sargent, E. H. What Does Net Zero by 2050 Mean to the Solar Energy Materials Researcher? *Matter* 2022, 5 (5), 1322–1325.
7. **Chen, B.**; Chen, H.; Hou, Y.; Xu, J.; Teale, S.; Bertens, K.; Chen, H.; Proppe, A.; Zhou, Q.; Yu, D.; Xu, K.; Vafaie, M.; Liu, Y.; Dong, Y.; Jung, E. H.; Zheng, C.; Zhu, T.; Ning, Z.; Sargent, E. H. Passivation of the Buried Interface via Preferential Crystallization of 2D Perovskite on Metal Oxide Transport Layers. *Adv. Mater.* 2021, e2103394.

6. Fang, Z.†; Wang, L.†; Mu, X.†; **Chen, B.†**; Xiong, Q.; Wang, W. D.; Ding, J.; Gao, P.; Wu, Y.; Cao, J. Grain Boundary Engineering with Self-Assembled Porphyrin Supramolecules for Highly Efficient Large-Area Perovskite Photovoltaics. *J. Am. Chem. Soc.* 2021.
5. Jung, E. H.†; **Chen, B.†**; Bertens, K.; Vafaie, M.; Teale, S.; Proppe, A.; Hou, Y.; Zhu, T.; Zheng, C.; Sargent, E. H. Bifunctional Surface Engineering on SnO<sub>2</sub> Reduces Energy Loss in Perovskite Solar Cells. *ACS Energy Lett.* 2020, 5 (9), 2796–2801.
4. **Chen, B.**; Baek, S.-W.; Hou, Y.; Aydin, E.; De Bastiani, M.; Scheffel, B.; Proppe, A.; Huang, Z.; Wei, M.; Wang, Y.-K.; Jung, E.-H.; Allen, T. G.; Van Kerschaver, E.; García de Arquer, F. P.; Saidaminov, M. I.; Hoogland, S.; De Wolf, S.; Sargent, E. H. Enhanced Optical Path and Electron Diffusion Length Enable High-Efficiency Perovskite Tandems. *Nat. Commun.* 2020, 11 (1), 1257.
3. Manekkathodi, A.†; **Chen, B.†**; Kim, J.; Baek, S.-W.; Scheffel, B.; Hou, Y.; Ouellette, O.; Saidaminov, M. I.; Voznyy, O.; Madhavan, V. E. Solution-Processed Perovskite-Colloidal Quantum Dot Tandem Solar Cells for Photon Collection beyond 1000 Nm. *Journal of Materials Chemistry A* 2019, 7 (45), 26020–26028.
2. **Chen, B.**; Wu, K.; Suslu, A.; Yang, S.; Cai, H.; Yano, A.; Soignard, E.; Aoki, T.; March, K.; Shen, Y. Controlling Structural Anisotropy of Anisotropic 2D Layers in Pseudo-1D/2D Material Heterojunctions. *Adv. Mater.* 2017, 29 (34), 1701201.
1. **Chen, B.**; Sahin, H.; Suslu, A.; Ding, L.; Bertoni, M. I.; Peeters, F.; Tongay, S. Environmental Changes in MoTe<sub>2</sub> Excitonic Dynamics by Defects-Activated Molecular Interaction. *ACS nano* 2015, 9 (5), 5326–5332.

## FUNDING SUPPORT

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### Pending Research

2. DE-FOA-0003308  
U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy  
\$250,000  
01/2025 – 12/2025  
Deciphering and Enhancing Interfacial Stability in Advanced Perovskite Solar Cells  
Role: Principal Investigator
1. OSR-5624  
King Abdullah University of Science and Technology  
\$350,000  
02/2024 – 01/2026  
All-Perovskite Tandem Solar Cells  
Role: Senior Personnel

### Current Research

5. Translation and Incubation Fund  
Trienens Institute for Sustainability and Energy  
\$100,000  
01/2024 – 12/2024  
Stable perovskite solar cells with cost-effective bilayer metal oxides as electron transport layers  
Role: Principal Investigator
4. Seed Funding Initiative  
Center for Engineering Sustainability and Resilience  
\$80,000  
02/2024 – 8/2025

Introducing AC Photo-Hall Method: Separating Electron/Hole Mobilities in Perovskite Photovoltaics

Role: Co-Principal Investigator

3. DE-FOA-0003058

U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy

\$6,700,000

09/2024 – 08/2026

STACKED: Stability and Characterization of Hole-Transporting Layers Key to Enabling Outdoor Durability

Role: Co-Principal Investigator

2. DE-EE0010502

U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy

\$9,000,000

09/2023 – 08/2026

TEAMUP: Tandems for Efficient and Advanced Modules using Ultrastable Perovskites

Role: Senior Personnel

1. HR001122S0044-SNAP-FP-009

U.S. Department of Defense, Defense Advanced Research Projects Agency

\$10,000,000

08/2023 – 07/2027

SYNCED: Interfacing Synthetic Biology with Electrochemical Detectors for Smart Non-Invasive Assays of Physiology

Role: Senior Personnel

### Completed Research

2. N00014-20-1-2572

U.S. Department of the Navy, Office of Naval Research

\$480,000

08/2020 – 07/2023

Wide-bandgap perovskites for efficient, stable tandems

Role: Senior Personnel

1. OSR-2020-CRG9-4350.2

King Abdullah University of Science and Technology, Office of Sponsored Research

\$600,000

04/2021 – 03/2024

SOLSTICE: Solar-driven Circular Carbon Enabled by Perovskite/Perovskite/Si Triple-Junction Tandems

Role: Senior Personnel

### PATENTS

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2. US and Canadian Patent: A Surface Treatment Method to Passivate Inverted Structure Perovskite Solar Cells

1. US Provisional Patent: Perovskite Solar Cells With Dual Site Binding Ligands

### CONFERENCES AND PRESENTATIONS

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18. Oral presentation at ACS fall meeting, Aug 2024

17. Invited talk at 4th tandemPV Workshop, June 2024

16. Oral presentation at MRS fall meeting, November 2023

15. Session chair for MRS fall meeting, November 2023
14. Invited talk at Physics Seminar Series UC Merced, October 2023
13. Invited talk at 2nd Northwestern/Muenster Symposium on Smart Materials, August 2023
12. Organizer for ACS Fall meeting symposium: Organic, Perovskite and Hybrid Solar (raised \$5000 sponsorship for the symposium), August 2023
11. Oral presentation at PVSC 50th, June 2023
10. Invited talk at Homeland Defense & Security Information Analysis Center, April 2023
9. Invited talk at APS March meeting, March 2023
8. Invited talk at EcoMat Webinar: Perovskite Materials for Photovoltaic and Optoelectronic Applications, January 2023
7. Invited talk at Lawrence Symposium on Epitaxy, Arizona State University, January 2023
6. Invited talk at Zhejiang University, June 2022
5. Invited talk at KAUST Research Conference: 2022 Accelerating Solar Energy Research towards meeting Vision 2030 Goals, May 2022
4. Invited talk at ICFO – UofT – Stanford International School on the Frontiers of Light, October 2021
3. Invited talk at MRS Spring Meeting, April 2021
2. Poster presentation at MRS Spring Meeting, March 2017
1. Poster presentation at MRS Spring Meeting, March 2016

## TEACHING AND MENTORING

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### **Instructor at Kellogg and the Querrey InQbation Lab** 2024

I teach the one-quarter Independent Study course, the Kellogg – Q Lab Entrepreneurial Residency. This course allows MBA students to be embedded in Northwestern research centers, providing structured entry points into cutting-edge technology areas and offering exposure to cross-disciplinary research.

### **Instructor for Independent Study (399) at Weinberg College of Arts and Sciences** 2024

I teach the on-quarter Independent Study course on optoelectronics, where I am responsible for developing the syllabus and providing guidance to the enrolled undergraduate students. This course offers students opportunities to build fundamental knowledge and explore research trends in the literature.

### **Perovskite Photovoltaic Research Group Leader** 2019 – 2022

I manage a team of over 15 members focusing on perovskite photovoltaics research. My responsibilities include mentoring on specific research projects, conceptualizing manuscripts, writing grant proposals, and preparing grant reports.

### **Lecturer (simulated)** 2019

At the Teaching in Higher Education course at the University of Toronto, I developed my syllabus on “Two-dimensional semiconductor materials and systems” and taught in simulated classes.

## ACADEMIC AND SOCIAL SERVICE

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### **Journal reviewer** 2016 – present

Science, Nature, Nature Energy, Journal of the American Chemical Society, Nature Communications, Advanced Materials, Matter, Energy & Environmental Science, Advanced Energy Materials, ACS Nano, ACS Photonics, Advanced Science, Chemical Science, ACS Applied Materials & Interfaces, Journal of

**Proposal reviewer**

2023 – present

Natural Sciences and Engineering Research Council of Canada, ACS Petroleum Research Fund

**HONORS AND AWARDS**

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1. Highly Cited Researcher in the field of Cross-Field - 2023 (Clarivate)

**ALL PUBLICATIONS**

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122. Zhu, T.; Grater, L.; Teale, S.; Vasileiadou, E. S.; Sharir-Smith, J.; Chen, B.; Kanatzidis, M. G.; Sargent, E. H. Coupling Photogeneration with Thermodynamic Modeling of Light-Induced Alloy Segregation Enables the Identification of Stabilizing Dopants. *Chem. Mater.* 2024.
121. Liu, C.; Yang, Y.; Chen, H.; Spanopoulos, I.; Bati, A. S. R.; Gilley, I. W.; Chen, J.; Maxwell, A.; Vishal, B.; Reynolds, R. P.; Wiggins, T. E.; Wang, Z.; Huang, C.; Fletcher, J.; Liu, Y.; Chen, L. X.; De Wolf, S.; Chen, B.; Zheng, D.; Marks, T. J.; Facchetti, A.; Sargent, E. H.; Kanatzidis, M. G. Two-Dimensional Perovskitoids Enhance Stability in Perovskite Solar Cells. *Nature* 2024, 1–3.
120. Teale, S.; Degani, M.; Chen, B.; Sargent, E. H.; Grancini, G. Molecular Cation and Low-Dimensional Perovskite Surface Passivation in Perovskite Solar Cells. *Nat. Energy* 2024, 1–14.
119. Khan, J. I.; Yang, Y.; Palmer, J. R.; Tyndall, S. B.; Chaudhuri, S.; Liu, C.; Grater, L.; North, J. D.; Chen, B.; Young, R. M.; Schatz, G. C.; Wasielewski, M. R.; Kanatzidis, M. G.; Swearer, D. F.; Sargent, E. H. Evaluation of Interfacial Photophysical Processes by Time-Resolved Optical Spectroscopy in Perovskite Solar Cells. *Matter* 2024, 7 (7), 2536–2550.
118. Fu, S.; Sun, N.; Xian, Y.; Chen, L.; Li, Y.; Li, C.; Abudulimu, A.; Kaluarachchi, P. N.; Huang, Z.; Wang, X.; Dolia, K.; Ginger, D. S.; Heben, M. J.; Ellingson, R. J.; Chen, B.; Sargent, E. H.; Song, Z.; Yan, Y. Suppressed Deprotonation Enables a Durable Buried Interface in Tin-Lead Perovskite for All-Perovskite Tandem Solar Cells. *Joule* 2024. <https://doi.org/10.1016/j.joule.2024.05.007>.
117. Chen, H.; Liu, C.; Xu, J.; Maxwell, A.; Zhou, W.; Yang, Y.; Zhou, Q.; Bati, A. S. R.; Wan, H.; Wang, Z.; Zeng, L.; Wang, J.; Serles, P.; Liu, Y.; Teale, S.; Liu, Y.; Saidaminov, M. I.; Li, M.; Rolston, N.; Hoogland, S.; Filleter, T.; Kanatzidis, M. G.; **Chen, B.\***; Ning, Z.\*; Sargent, E. H.\* Improved Charge Extraction in Inverted Perovskite Solar Cells with Dual-Site-Binding Ligands. *Science* 2024, 384 (6692), 189–193.
116. Morteza Najarian, A.; Vafaie, M.; **Chen, B.**; García de Arquer, F. P.; Sargent, E. H. Photophysical Properties of Materials for High-Speed Photodetection. *Nature Reviews Physics* 2024, 1–12.
115. Xu, J.; Maxwell, A.; Song, Z.; Bati, A. S. R.; Chen, H.; Li, C.; Park, S. M.; Yan, Y.; **Chen, B.\***; Sargent, E. H.\* The Dynamic Adsorption Affinity of Ligands Is a Surrogate for the Passivation of Surface Defects. *Nat. Commun.* 2024, 15 (1), 2035.
114. Maxwell, A.; Chen, H.; Grater, L.; Li, C.; Teale, S.; Wang, J.; Zeng, L.; Wang, Z.; Park, S. M.; Vafaie, M.; Sidhik, S.; Metcalf, I. W.; Liu, Y.; Mohite, A. D.; **Chen, B.\***; Sargent, E. H.\* All-Perovskite Tandems Enabled by Surface Anchoring of Long-Chain Amphiphilic Ligands. *ACS Energy Lett.* 2024, 520–527.
113. Yang, Y.; Liu, C.; Ding, Y.; Ding, B.; Xu, J.; Liu, A.; Yu, J.; Grater, L.; Zhu, H.; Hadke, S.; Sangwan, V.; Bati, A. S. R.; Hu, X.; Li, J.; Park, S. M.; Hersam, M.; **Chen, B.\***; Nazeeruddin, M.\*; Kanatzidis, M. G.\*; Sargent, E. H.\* A Thermotropic Liquid Crystal Enables Efficient and Stable Perovskite Solar Modules. *Nat. Energy* 2024, 1–8.
112. Xu, F.; Aydin, E.; Liu, J.; Ugur, E.; Harrison, G. T.; Xu, L.; Vishal, B.; Yildirim, B. K.; Wang, M.; Ali, R.; Subbiah, A. S.; Yazmaciyan, A.; Zhumagali, S.; Yan, W.; Gao, Y.; Song,

- Z.; Li, C.; Fu, S.; **Chen, B.**; ur Rehman, A.; Babics, M.; Razzaq, A.; De Bastiani, M.; Allen, T. G.; Schwingenschlögl, U.; Yan, Y.; Laquai, F.; Sargent, E. H.; De Wolf, S. Monolithic Perovskite/Perovskite/Silicon Triple-Junction Solar Cells with Cation Double Displacement Enabled 2.0 eV Perovskites. *Joule* 2024, 8 (1), 224–240.
111. Liu, Y.†; Zhu, T.†; Grater, L.†; Chen, H.†; Reis, R.; Maxwell, A.; Cheng, M.; Dong, Y.; Teale, S.; Leontowich, A. F. G.; Kim, C.; Chan, P. T.; Wang, M.; Paritmongkol, W.; Gao, Y.; Park, S.; Xu, J.; Khan, J. I.; Laquai, F.; Walker, G. C.; Dravid, V. P.; **Chen, B.\***; Sargent, E. H.\* A Three-Dimensional Quantum Dot Network Stabilizes Perovskite Solids via Hydrostatic Strain. *Matter* 2024, 7 (1), 107–122.
  110. Wang, J.; Zeng, L.; Zhang, D.; Maxwell, A.; Chen, H.; Datta, K.; Caiazza, A.; Remmerswaal, W. H. M.; Schipper, N. R. M.; Chen, Z.; Ho, K.; Dasgupta, A.; Kusch, G.; Ollearo, R.; Bellini, L.; Hu, S.; Wang, Z.; Li, C.; Teale, S.; Grater, L.; **Chen, B.**; Wienk, M. M.; Oliver, R. A.; Snaith, H. J.; Janssen, R. A. J.; Sargent, E. H. Halide Homogenization for Low Energy Loss in 2-eV-Bandgap Perovskites and Increased Efficiency in All-Perovskite Triple-Junction Solar Cells. *Nat. Energy* 2023, 1–11.
  109. Xu, J.; Chen, H.; Grater, L.; Liu, C.; Yang, Y.; Teale, S.; Maxwell, A.; Mahesh, S.; Wan, H.; Chang, Y.; **Chen, B.**; Rehl, B.; Park, S. M.; Kanatzidis, M. G.; Sargent, E. H. Anion Optimization for Bifunctional Surface Passivation in Perovskite Solar Cells. *Nat. Mater.* 2023, 1–8.
  108. Liu, C.†; Yang, Y.†; Chen, H.†; Xu, J.†; Liu, A.†; Bati, A. S. R.; Zhu, H.; Grater, L.; Hadke, S. S.; Huang, C.; Sangwan, V. K.; Cai, T.; Shin, D.; Chen, L. X.; Hersam, M. C.; Mirkin, C. A.; **Chen, B.\***; Kanatzidis, M. G.\*; Sargent, E. H.\* Bimolecularly-passivated interface enables efficient and stable inverted perovskite solar cells, *Science* 2023, 382 (6672), 810–815.
  107. Park, S. M.; Wei, M.; Lempeis, N.; Yu, W.; Hossain, T.; Agosta, L.; Carnevali, V.; Atapattu, H. R.; Serles, P.; Eickemeyer, F. T.; Shin, H.; Vafaie, M.; Choi, D.; Darabi, K.; Jung, E. D.; Yang, Y.; Kim, D. B.; Zakeeruddin, S. M.; **Chen, B.**; Amassian, A.; Filleter, T.; Kanatzidis, M. G.; Graham, K. R.; Xiao, L.; Rothlisberger, U.; Grätzel, M.; Sargent, E. H. Low-Loss Contacts on Textured Substrates for Inverted Perovskite Solar Cells. *Nature* 2023, 1–3.
  106. Zhu, H.; Teale, S.; Lintangpradipto, M. N.; Mahesh, S.; **Chen, B.**; McGehee, M. D.; Sargent, E. H.; Bakr, O. M. Long-Term Operating Stability in Perovskite Photovoltaics. *Nat. Rev. Mater.* 2023, 1–18.
  105. Park, S. M.; Wei, M.; Xu, J.; Atapattu, H. R.; Eickemeyer, F. T.; Darabi, K.; Grater, L.; Yang, Y.; Liu, C.; Teale, S.; **Chen, B.**; Chen, H.; Wang, T.; Zeng, L.; Maxwell, A.; Wang, Z.; Rao, K. R.; Cai, Z.; Zakeeruddin, S. M.; Pham, J. T.; Risko, C. M.; Amassian, A.; Kanatzidis, M. G.; Graham, K. R.; Grätzel, M.; Sargent, E. H. Engineering Ligand Reactivity Enables High-Temperature Operation of Stable Perovskite Solar Cells. *Science* 2023, 381 (6654), 209–215.
  104. Grater, L.; Wang, M.; Teale, S.; Mahesh, S.; Maxwell, A.; Liu, Y.; Park, S. M.; **Chen, B.**; Laquai, F.; Kanatzidis, M. G.; Sargent, E. H. Sterically Suppressed Phase Segregation in 3D Hollow Mixed-Halide Wide Band Gap Perovskites. *J. Phys. Chem. Lett.* 2023, 14 (26), 6157–6162.
  103. Wang, Z.; Zeng, L.; Zhu, T.; Chen, H.; **Chen, B.**; Kubicki, D. J.; Balvanz, A.; Li, C.; Maxwell, A.; Ugur, E.; Dos Reis, R.; Cheng, M.; Yang, G.; Subedi, B.; Luo, D.; Hu, J.; Wang, J.; Teale, S.; Mahesh, S.; Wang, S.; Hu, S.; Jung, E. D.; Wei, M.; Park, S. M.; Grater, L.; Aydin, E.; Song, Z.; Podraza, N. J.; Lu, Z.-H.; Huang, J.; Dravid, V. P.; De Wolf, S.; Yan, Y.; Grätzel, M.; Kanatzidis, M. G.; Sargent, E. H. Suppressed Phase Segregation for Triple-Junction Perovskite Solar Cells. *Nature* 2023, 618 (7963), 74–79.
  102. Ugur, E.; Aydin, E.; De Bastiani, M.; Harrison, G. T.; Yildirim, B. K.; Teale, S.; **Chen, B.**; Liu, J.; Wang, M.; Seitkhan, A.; Babics, M.; Subbiah, A. S.; Said, A. A.; Azmi, R.; Rehman, A. ur; Allen, T. G.; Schulz, P.; Sargent, E. H.; Laquai, F.; De Wolf, S. Front-Contact Passivation

through 2D/3D Perovskite Heterojunctions Enables Efficient Bifacial Perovskite/Silicon Tandem Solar Cells. *Matter* 2023.

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