MINGYANG WEI

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PROFESSIONAL APPOINTMENTS

Assistant Professor, National University of Singapore	2024-current
Postdoctoral Associate, EPFL (Advisor: Michael Graetzel)	2021-2024
Postdoctoral Associate, University of Toronto (Advisor: Edward H. Sargent)	2020-2021

EDUCATION

Ph.D. in Electrical Engineering, University of Toronto — September 2020

Advisor: Edward H. Sargent

Thesis: Composition and Dimensionality Engineering of Perovskite Materials for Photovoltaic Applications

B.S. in Physics, Peking University — June 2016

RESEARCH INTERESTS

Hybrid organic-inorganic materials; nanocrystalline materials; solution-processed semiconductors; materials chemistry; heterostructures; interface engineering; electronic structure and bonding; in-situ optical spectroscopy; optoelectronic devices; photovoltaics; ultrafast photodetection; wearable electronics

AWARDS AND HONORS

Clarivate Highly Cited Researchers	2024
Presidential Young Professorship, National University of Singapore	2024
Clarivate Highly Cited Researchers	2023
Forbes 30 under 30 (Europe)	2022
Clarivate Highly Cited Researchers	2022
Marie Skłodowska-Curie Fellowship	2021
Governor General's Gold Medal	2020
University of Toronto Fellowship	2017
Edward S. Rogers Sr. Graduate Scholarship, University of Toronto	2016
Excellence in Undergraduate Research, Peking University	2016
May Fourth Scholarship, Peking University	2015
President's Fund for Undergraduate Research, Peking University	2014

SELECTED PUBLICATIONS (CORRESPONDING AND FIRST AUTHOR)

(21) J. Wang, L. Zheng, H. Kim*, H. He, S. Wang, F. T. Eickemeyer, Y. Jo, Y. Zhao, M. Wei*, J. Jeong*, M. Grätzel*, X. Zhang*, "Dipolar Carbazole Ammonium for Broadened Electric Field Distribution in High-Performance Perovskite Solar Cells" *Journal of the American Chemical Society* **2025**, in press

(20) L. Zheng†, M. Wei†, F. T. Eickemeyer†, J. Gao†, B. Huang, U, Gunes, P. Schouwink, D. W. Bi, V. Carnevali, M. Mensi, F. Biasoni, Y. Zhang, L. Agosta, V. Slama, N. Lempesis, M. A. Hope, S. M. Zakeeruddin, L. Emsley, U. Rothlisberger, L. Pfeifer, Y. Xuan, M. Grätzel, "Strain-Induced Rubidium Incorporation into Wide Bandgap Perovskites Reduces Photovoltage Loss" *Science* **2025**, in press

(19) Z. Liu†, R. Lin†, M. Wei†, M. Yin†, P. Wu, M. Li, L. Li, Y. Wang, G. Chen, V. Carnevali, L. Agosta, V. Slama, N. Lempesis, Z. Wang, M. Wang, Y. Deng, H. Luo, H. Gao, U. Rothlisberger, S. M. Zakeeruddin, X. Luo, Y. Liu, M. Grätzel, H. Tan, "All-Perovskite Tandem Solar Cells Achieving >29% Efficiency with Improved (100)-Orientation in Wide-Bandgap Perovskites" *Nature Materials* **2025**, 24, 252.

(18) B. Dong†, M. Wei†, Y. Li†, Y. Yang†, W. Ma, Y. Zhang, Y. Ran, M. Cui, Z. Su, Q. Fan, Z. Bi, T. Edvinsson, Z. Ding, H. Ju, S. You, S. Zakeeruddin, X. Li, A. Hagfeldt, M. Grätzel, Y. Liu, "Self-Assembled Bilayer for Perovskite Solar Cells with Improved Tolerance Against Thermal Stresses" *Nature Energy* **2025**, doi.org/10.1038/s41560-024-01689-2

(17) G. Yang, X. Liu, L. Wang, K. Dong, B. Zhang, X. Jiang*, Y. Yin, M. Wang, W. Niu, L. Zheng, S. Yu, S. Liu, S. M. Zakeeruddin, X. Guo, S. Pang*, L. Sun, M. Grätzel, M. Wei*, "Tailored Supramolecular Interactions in Host-Guest Complexation for Efficient and Stable Perovskite Solar Cells and Modules" *Angewandte Chemie* **2024**, e202410454.

(16) Y. Zou, W. Yu, H. Guo, Q. Li, X. Li, L. Li, H. Wang, Z. Tang, S. Yang, B. Qu*, Y Gao, Z. Chen, S. Wang, D. Zhang, S. M. Zakeeruddin, Y. Peng, H. Zhou, Q. Gong, M. Wei*, M. Grätzel*, L. Xiao*, "A Crystal Capping Layer for Formation of Black-phase $FAPbI_3$ Perovskites in Humid Air" *Science* **2024**, 385, 161.

(15) W. Yu, M. Wei*, Z. Tang, H. Zou, L. Li, Y. Zou, S. Yang, Y. Wang, Y. Zhang, X. Li, H. Guo, C. Wu, B. Qu, Y. Gao, G. Lu, S. Wang, Z. Chen, Z. Liu, H. Zhou, B. Wei, Y. Liao*, L. Zhang*, Y. Li, Q. Gong, E. H. Sargent, L. Xiao*, "Separating Crystal Growth from Nucleation Enables the In-situ-controllable Synthesis of Nanocrystals for Efficient Perovskite Light-Emitting Diodes" *Advanced Materials* **2023**, 35, 2301114.

(14) L. Li†, M. Wei†, V. Carnevali†, H. Zeng†, M. Zeng, R. Liu, N. Lempesis, F. T. Eickemeyer, L. Luo, L. Agosta, M. Dankl, S. M. Zakeeruddin, U. Roethlisberger, M. Grätzel, Y. Rong, X. Li. Buried-Interface Engineering Enables Efficient and 1960-Hour ISOS-L-2I Stable Inverted Perovskite Solar Cells. *Advanced Materials* **2023**, 36, 2303869.

(13) S. M. Park†, M. Wei†, N. Lempesis†, W. Yu, T. Hossain, L. Agosta, V. Carnevali, H. R. Atapattu, P. Serles, F. T. Eickemeyer, H. Shin, M. Vafaie, D. Choi, K. Darabi, E. D. Jung, Y. Yang, D. B. Kim, S. M. Zakeeruddin, B. Chen, A. Amassian, T. Filleter, M. G. Kanatzidis, K. R. Graham, L. Xiao, U. Rothlisberger, M. Grätzel, E. H. Sargent. Low-Loss Contacts on Textured Substrates for Inverted Perovskite Solar Cells. *Nature* **2023**, 624, 289-294.

(12) S. M. Park†, M. Wei†, J. Xu†, H. R. Atapattu, F. T. Eickemeyer, K. Darabi, L. Grater, Y. Yang, C. Liu, S. Teale, B. Chen, H. Chen, T. Wang, L. Zeng, A. Maxwell, Z. Wang, K. R. Rao, Z. Cai, S. M. Zakeeruddin, J. T. Pham, C. M. Risko, A. Amassian, M. G. Kanatzidis, K. R. Graham,

M. Grätzel, E. H. Sargent. Engineering Ligand Reactivity Enables High-Temperature Operation of Stable Perovskite Solar Cells. *Science* **2023**, 381, 209-215.

(11) H. Chen†, M. Wei†, Y. He, J. Abed, S. Teale, E. H. Sargent, Z. Yang. Germanium Silicon Oxide Achieves Multi-Coloured Ultra-Long Phosphorescence and Delayed Fluorescence at High Temperature. *Nature Communications* **2022**, 13, 4428.

(10) R. Lin†, J. Xu†, M. Wei†, Y. Wang†, Z. Qin†, Z. Liu, J. Wu, K. Xiao, B. Chen, S. M. Park, G. Chen, H. R. Atapattu, K. R. Graham, J. Xu, J. Zhu, L. Li, C. Zhang, E. H. Sargent, H. Tan. All-Perovskite Tandem Solar Cells with Improved Grain Surface Passivation. *Nature* **2022**, 603, 73-78.

(9) M. I. Saidaminov†, K. Williams†, M. Wei†, A. Johnston, R. Quintero-Bermudez, M. Vafaie, J. M. Pina, A. H. Proppe, Y. Hou, G. Walters, S. O. Kelley, W. A. Tisdale, E. H. Sargent. Multi-Cation Perovskites Prevent Carrier Reflection from Grain Surfaces. *Nature Materials* **2020**, 19, 412-418.

(8) M. Wei†, K. Xiao†, G. Walters, R. Lin, Y. Zhao, M. I. Saidaminov, P. Todorović, A. Johnston, Z. Huang, H. Chen, A. Li, J. Zhu, Z. Yang, Y.-K. Wang, A. H. Proppe, S. O. Kelley, Y. Hou, O. Voznyy, H. Tan, E. H. Sargent. Combining Efficiency and Stability in Mixed Tin–Lead Perovskite Solar Cells by Capping Grains with an Ultrathin 2D Layer. *Advanced Materials* **2020**, 32, 1907058.

(7) Z. Yang†, M. Wei†, O. Voznyy, P. Todorovic, M. Liu, R. Quintero-Bermudez, P. Chen, J. Z. Fan, A. H. Proppe, L. N. Quan, G. Walters, H. Tan, J.-W. Chang, U.-S. Jeng, S. O. Kelley, E. H. Sargent. Anchored Ligands Facilitate Efficient B-Site Doping in Metal Halide Perovskites. *Journal of the American Chemical Society* **2019**, 141, 8296-8305.

(6) M. Wei†, F. P. G. de Arquer†, G. Walters†, Z. Yang, L. N. Quan, Y. Kim, R. Sabatini, R. Quintero-Bermudez, L. Gao, J. Z. Fan, F. Fan, A. Gold-Parker, M. F. Toney, E. H. Sargent. Ultrafast Narrowband Exciton Routing within Layered Perovskite Nanoplatelets Enables Low-Loss Luminescent Solar Concentrators. *Nature Energy* **2019**, 4, 197-205.

(5) G. Walters†, M. Wei†, O. Voznyy, R. Quintero-Bermudez, A. Kiani, D.-M. Smilgies, R. Munir, A. Amassian, S. Hoogland, E. H. Sargent. The Quantum-Confined Stark Effect in Layered Hybrid Perovskites Mediated by Orientational Polarizability of Confined Dipoles. *Nature Communications* **2018**, 9, 4214.

(4) H. Tan†, F. Che†, M. Wei†, Y. Zhao, M. I. Saidaminov, P. Todorović, D. Broberg, G. Walters, F. Tan, T. Zhuang, B. Sun, Z. Liang, H. Yuan, E. Fron, J. Kim, Z. Yang, O. Voznyy, M. Asta, E. H. Sargent. Dipolar Cations Confer Defect Tolerance in Wide-Bandgap Metal Halide Perovskites. *Nature Communications* **2018**, 9, 3100.

(3) M. Wei, W. Sun, Y. Liu, Z. Liu, L. Xiao, Z. Bian, Z. Chen. Highly Luminescent and Stable Layered Perovskite as the Emitter for Light Emitting Diodes. *Physica Status Solidi (a)* **2016**, 213, 2727-2732.

(2) M. Wei, Y.-H. Chung, Y. Xiao, Z. Chen. Color Tunable Halide Perovskite $CH_3NH_3PbBr_{3-x}Cl_x$ Emission via Annealing. *Organic Electronics* **2015**, 26, 260-264.

(1) M. Wei, G. Gui, Y.-H. Chung, L. Xiao, B. Qu, Z. Chen. Micromechanism of Electroplex Formation. *Physica Status Solidi (b)* **2015**, 252, 1711-1716.

PROFESSIONAL PRESENTATIONS

Invited Talk

(11) *Qingdao University of Technology* – Qingdao, China, October **2024**

(10) EcoEnergy International Academic Conference 2024 – Qingdao, China, October **2024**

(9) School of Physics Seminar, *Peking University* – Beijing, China, July **2024**

(8) Energy Sciences Institute, *Yale University* – New Haven, CT, April **2024**

(7) MSE Seminar, *National University of Singapore* – Singapore, March **2024**

(6) Mads Clausen Institute, *Southern Denmark University* – Sønderborg, December **2023**

(5) Global Photovoltaic Conference 2023 – Gwangju, South Korea, September **2023**

(4) College of Optics and Photonics, *University of Central Florida* – Orlando, FL, May **2023**

(3) Mechanical Engineering Seminar, *Duke University* – Durham, NC, March **2023**

(2) *Athena European University* – Virtual Lecture, November **2022**

(1) *Victoria University*, Victoria, Canada – Virtual Lecture, May **2022**

Contributed Presentations

(5) Materials Research Society 2024 Fall Meeting – Boston, MA, December **2024**

(4) Materials Research Society 2022 Fall Meeting – Boston, MA, November **2022**

(3) 23rd International Conference on Photochemical Conversion and Storage of Solar Energy – Lausanne, Switzerland, August **2022**

(2) 47th IEEE Photovoltaics Specialists Conference – Virtual Seminar, June **2020**

(1) European Materials Research Society 2019 Fall Meeting – Warsaw, Poland, September **2019**

RESEARCH SUPPORT

Current Funding

Source: National University of Singapore

Title: Presidential Young Professorship

Role: Principal Investigator

Period: 9/1/2024-8/31/2029

Amount: S$1,250,000

Completed Funding

Source: H2020-EU.1.3.-Marie Skłodowska-Curie Actions

Title: LrgPSCs: Highly Efficient Large-area Perovskite Solar Cells

Role: Individual Fellowship

Period: 9/1/2021-8/31/2023

Amount: €191,149

COURSE INTRODUCTION

MLE5248 - Materials for Sustainable Macroelectronics (developed; graduate)

Summer 2025: upcoming

STUDENT ADVISING

Visiting Scholars

(1) Yuchao Liu (2025-current), Professor, Qingdao University of Science and Technology

Post-Doctoral Researchers

(2) Hao Gu (2025-current), Ph.D., University of Macau

(1) Siqi Sun (2024-current), Ph.D., Jilin University

Doctoral Students

(1) Seongbeom Lee – Main Advisor: Somin Park (2024-current)

PROFESSIONAL ACTIVITIES

Journal Advisory Board, *EcoEnergy*, *Nanoenergy Advances*

Guest Editor, *Crystals*, *Nanoenergy Advances*

Manuscript Reviewer, Springer Nature Publishing, American Chemical Society, Elsevier Publishing, Wiley Publishing, De Gruyter Publishing

UNIVERSITY SERVICE

Department Service

Research Lab Management Committee (2025-current)