

– Dr. Changhong Wang –

Banting Postdoctoral Fellow, University of Maryland, College Park, USA

Visiting Researcher, University of Western Ontario, Canada

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Education and Professional Training

University of Maryland, College Park, USA 2022, 05—present

Banting Postdoctoral Fellow

Supervisor: Prof. Chunsheng Wang

Research topic: High-Energy-Density All-Solid-State Li-S Batteries for Electric Vehicle Application

University of Western Ontario (UWO), Canada 2022.05—present

Visiting Researcher (Self-Funded)

Co-supervisor: Prof. Xueliang Sun

Research topic: High-Energy-Density All-Solid-State Li-S Batteries for Electric Vehicle Application

University of Western Ontario (UWO), Canada 2016, 09—2020, 01

Ph.D. in Mechanical & Materials Engineering

Supervisor: Prof. Xueliang (Andy) Sun

Thesis: Interface Engineering of Sulfide-based All-Solid-State Lithium Batteries

Singapore University of Technology and Design (SUTD), Singapore 2014, 08—2016, 08

Research Assistant

Supervisor: Prof. Rong Zhao

Research Program: Developing Memristors for Brain-Inspired Neuromorphic Computing

SINANO, Chinese Academy of Sciences (CAS), China 2012, 04—2014, 07

Joint Training of M.S. in Materials Engineering

Supervisors: Prof. Wei Lu/Prof. Liwei Chen

Thesis: Rational Design of Sulfur Cathode for High-Performance Li-S Batteries

University of Science and Technology of China (USTC), China 2011, 09—2014, 06

M.S. in Materials Engineering, outstanding graduate

Supervisors: Prof. Chunhua Chen

Thesis: Rational Design of Sulfur Cathode for High-Performance Li-S Batteries

University of Science and Technology of Anhui (ASTU), China 2007, 09—2011, 06

B.S. in Applied Chemistry, (high honors) outstanding graduate

Supervisor: Prof. Changchun Song

Thesis: Chemical Modification of Chitosan and Its Application

Industrial Experience

R&D Director, GLABAT Solid-State Battery Inc., Canada 2020, 11 – 2022.04

Senior Research Scientist, GLABAT Solid-State Battery Inc. Canada 2020, 02 – 2020, 10

Honors and Awards

2022 Highly Cited Researcher in Cross-Field (by Clarivate)	2022
First Prize of the 2nd BTR New Energy Technology Competition (25,000 CHY)	2022,06
Banting Postdoctoral Fellowship (140,000K CAD)	2022,05 – 2024,04
Chinese Government Award for Outstanding Self-Financed Students Abroad	2020
MITACS Accelerate Scholarship	2018,01 – 2020,01
Full Scholarship from UWO for Graduate Study	2016, 09 – 2020,01
The First-Class Award of Master Thesis Awarded by USTC	2014
Outstanding Graduates from USTC	2014
Du Shu Lake Scholarship from USTC	2012
Outstanding Graduates from ASTU	2011
Provincial Merit Student	2011
The Second-Class Scholarship of ASTU	2011
Excellent Student Cadre	2010
The Second-Class Scholarship of ASTU	2009
Outstanding Cadres of Student Association	2009
National Motivative Scholarships	2008
The First-Class Scholarship of ASTU	2008

Research Interests

My research primarily focuses on next-generation clean energy storage with unprecedented safety and energy density, specifically **all-solid-state Li/Na batteries**, which leverages fundamental principles of applied electrochemistry, materials science, chemical engineering, brain science, and advanced chemical/structural characterizations.

Publications

‡ Denotes equal contribution. *Denotes the corresponding author. ORCID:[0000-0002-4201-0130](https://orcid.org/0000-0002-4201-0130).
(80 peer-reviewed journal publications in total; h-index=41; 5,400+citations/[Google Scholar](https://scholar.google.com/citations?user=0000-0002-4201-0130))

First-Author and Corresponding-Author Publications

- 1) Y. Sun[‡], **C. Wang[‡]**, H. Guo, X. Sun. One-Step Calcination Synthesis of Bulk-Doped Surface-Modified Ni-Rich Cathodes with Superlattice for Long-Cycling Lithium-Ion Batteries. **Angew. Chem. Int. Ed.** 2023. **In press**
- 2) **C. Wang**, J-T Kim, C. Wang, and X. Sun*. Progress and Prospects of All-Solid-State Pouch Cells with Inorganic Solid-State Electrolytes. **Advanced Materials**. 2022, DOI: <https://doi.org/10.1002/adma.202209074>
- 3) H. Wang[‡], **C. Wang[‡]**, M. Zheng, J. Liang, M. Yang, X. Feng, X. Ren, D. Y.W. Yu, Y. Li*, and X.Sun*. A Shuttle-Free Solid-State Cu-Li Battery Based on a Sandwich Structured Electrolyte. **Angew. Chem. Int. Ed.** 2022, DOI: <https://doi.org/10.1002/anie.202214117>
- 4) J-T Kim[‡], X. Hao[‡], **C. Wang***, and X. Sun*. Cathode Materials for Single-Phase Solid-Solid Conversion Li-S Batteries. **Matter**. 2023, doi: <https://doi.org/10.1016/j.matt.2022.11.019>.
- 5) **C. Wang**, X. Sun. The Promise of Solid-State Batteries for Safe and Reliable Energy Storage. **Engineering**. 2022. <https://doi.org/10.1016/j.eng.2022.10.008>. **(invited)**
- 6) R. Yu[‡], **C. Wang[‡]**, H. Duan[‡], M. Jiang[‡], Y. Sun, Y. Zhao, J. Liang, J. Fu, S. Deng, Z. Ren, G. Li, J. Wang*, C. V. Singh*, H. Huang, R. Li, N. Chen, X. Sun*, Boosting charge-transfer kinetics of Li-rich layered oxide cathodes in halide all-solid-state batteries, **Advanced Materials**. 2022, 2207234. **(highlighted as the front cover)**
- 7) **C. Wang**, J. Liang, J. Kim, X. Sun*. Prospects of Halide-based All-Solid-State Batteries: From Materials Design to Practical Application. **Science Advances**. 2022, 8,36, DOI: [10.1126/sciadv.adc9516](https://doi.org/10.1126/sciadv.adc9516). (Highlighted by [Frontier Energy](#);)

- 8) **C. Wang**[‡], J. Liang[‡], J. Luo, J. Liu, X. Li, F. Zhao, R. Li, H. Huang, S. Zhao, L. Zhang, J. Wang*, X. Sun*. A Universal Wet-Chemistry Synthesis of Solid-State Halide Electrolytes for High-Performance All-Solid-State Lithium Metal Batteries. *Science Advances*, 7, eabh1896 (2021). (Highlighted by [Meet Your Science](#), [Energist](#), [icailiaoren](#), [Battery Future](#), [Nanoer](#);))
- 9) **C. Wang**, T. Deng, X. Fan, M. Zheng, R. Yu, Q. Lu, H. Duan, H. Huang, C. Wang, X. Sun. Identifying Soft Breakdown in All-Solid-State Lithium Battery. *Joule*, 2022, 6, 8, 1770-1781. <https://doi.org/10.1016/j.joule.2022.05.020>. (Highlighted by [Energist](#))
- 10) **C. Wang**[‡], R. Yu[‡], H. Duan[‡], Q. Lu, Q. Li, K. Adair, D. Bao, Y. Liu, R. Yang, J. Wang*, S. Zhao*, H. Huang*, X. Sun*. Solvent-Free Approach for Interweaving Freestanding and Ultrathin Inorganic Solid Electrolyte Membranes, *ACS Energy Letters*, 2022, 7, 410-416. DOI: 10.1021/acsenergylett.1c02261. (Highlighted by [Electrochemical Energy](#), [SCI Materials Hub](#), [Yanzhichengli](#).) **The most-read article.**
- 11) **C. Wang**, J. Liang, Y. Zhao, M. Zheng, X. Li, X. Sun*. All-Solid-State Lithium Metal Batteries Enabled by Sulfide Electrolytes: from Fundamental Study to Practical Engineering Design. *Energy Environmental Science*, 2021, 14, 2577-2619. (Highlighted by [Nanoer](#); [X-MOL](#))
- 12) **C. Wang**[‡], S. Hwang[‡], M. Jiang[‡], J. Liang, Y. Sun, K. Adair, M. Zheng, S. Mukherjee, X. Li, R. Li, H. Huang, S. Zhao, L. Zhang, S. Lu, J. Wang, C. V. Singh,* D. Su,* X. Sun*. Deciphering Interfacial Chemical and Electrochemical Reaction Mechanism of Sulfide-based All-Solid-State Batteries. *Advanced Energy Materials*, 2021, 2100210. (Highlighted by [Nanoer](#); [Nanoer](#);))
- 13) **C. Wang**, K. Adair, X. Sun*. All-Solid-State Lithium Battery with Sulfide Electrolyte: Understanding Interfacial Ion and Electron Transport, *Accounts of Materials Research*, 2021, doi: 10.1021/accountsr.1c00137. (Highlighted by [Nanoer](#); **Highlighted as a Cover**)
- 14) **C. Wang**[‡], J. Liang[‡], M. Jiang, X. Li, S. Mukherjee, K. Adair, M. Zheng, Y. Zhao, F. Zhao, S. Zhang, R. Li, H. Huang, S. Zhao, L. Zhang, S. Lu, C. Singh*, X. Sun*. Eliminating the Interfacial Challenges of All-Inorganic Solid-State Batteries by In-situ Interfacial Growth of Halide Electrolytes. *Nano Energy*, 2020, 76, 105015. (Highlighted by [Energist](#);))
- 15) **C. Wang**, R. Yu, S. Hwang, J. Liang, X. Li, C. Zhao, Y. Sun, J. Wang, N. Holmes, R. Li, H. Huang, S. Zhao, L. Zhang, S. Lu, D. Su*, X. Sun*. Single-Crystal Cathodes Enabling High-Performance All-Solid-State Lithium Batteries. *Energy Storage Materials*. 2020, 30, 98-103.
- 16) **C. Wang**, J. Liang, S. Hwang, X. Li, Y. Zhao, K. Adair, C. Zhao, X. Li, S. Deng, X. Lin. X. Yang, R. Li, Q. Zhao, L. Zhang, S. Lu, D. Su*, X. Sun*. Unveiling the Critical Role of Interfacial Ionic Conductivity in All-Solid-State Lithium Batteries. *Nano Energy*, 2020, 72. 104686. (Highlighted by [Energist](#); [Nanoer](#);))
- 17) **C. Wang**, K. Adair, J. Liang, X. Li, Y. Sun, X. Li, J. Wang, Q. Sun, F. Zhao, X. Lin, R. Li, H. Huang, L. Zhang, R. Yang, S. Lu, X. Sun*. Solid-State Plastic Crystal Electrolytes: Effective Protection Interlayers for Sulfide-Based All-Solid-State Lithium Metal Batteries, *Advanced Functional Materials*. 2019, 29, 1900392. (Highlighted by [Nanoer](#); [qingxindianyuan](#);))
- 18) **C. Wang**[‡], X. Li[‡], Y. Zhao, M. Banis, J. Liang, X. Li, Y. Sun, K. Adair, Q. Sun, Y. Liu, F. Zhao, S. Deng, X. Lin, R. Li, Y. Hu, T-K Sham, H. Huang, L. Zhang, R. Yang, S. Lu, X. Sun*. Manipulating Interfacial Nanostructure to Achieve High-Performance All-Solid-State Lithium-Ion Batteries, *Small Methods*. 2019, 1900261. (Highlighted by [Materials Views Wiley](#); [Qingxindianyuan](#))
- 19) **C. Wang**, Y. Zhao, Q. Sun, X. Li, Y. Liu, J. Liang, X. Li, X. Lin, R. Li, K. Adair, L. Zhang, R. Yang, S. Lu, X. Sun*, Stabilizing Interface between Li₁₀SnP₂S₁₂ and Li Metal by Molecular Layer Deposition. *Nano Energy*, 2018, 53, 168-174. (Highlighted by [Yanzhichengli](#); [Cailiaoren](#);))
- 20) **C. Wang**, Q. Sun, Y. Liu, Y. Zhao, X. Li, X. Lin, M. Banis, M. Li, W. Li, K. Adair, D. Wang, J. Liang, R. Li, L. Zhang, R. Yang, S. Lu, X. Sun*. Boosting the Performance of Lithium Batteries with Solid-Liquid Hybrid Electrolytes: Interfacial Properties and Effects of Liquid Electrolytes, *Nano Energy*, 2018, 48, 35-43.
- 21) **C. Wang**, W. He, Y. Tong, Y. Zhang, K. Huang, L. Song, S. Zhong, R. Ganeshkumar, R. Zhao*.

- Memristive Devices with Highly Repeatable Analog States Boosted by Graphene Quantum Qots, *Small*, 2017, 13, 1603435. (Inside Front Cover)
- 22) **C. Wang**[‡], W. He[‡], Y. Tong, R. Zhao*. Investigation and Manipulation of Different Analog Behaviors of Memristor as Electronic Synapse for Neuromorphic Applications. *Scientific Reports*. 2016, 6, 22970.
 - 23) **C. Wang**[‡], H. Chen,[‡] W. Dong, W. Lu*, L. Chen*. Sulfur-Amine Chemistry-based Synthesis of Multi-Walled Carbon Nanotube-Sulfur Composite for High-Performance Li-S Batteries. *Chemical Communications*, 2014, 50, 1202-1204.
 - 24) H. Chen[‡], **C. Wang**[‡], Y. Dai, J. Ge, W. Lu, J. Yang, L. Chen*. In-situ Activated Polycation as a Multifunctional Additive for Li-S Batteries. *Nano Energy*, 2016, 26, 43-49.
 - 25) H. Chen[‡], **C. Wang**[‡], W. Dong, W. Lu, Z. Du and L. Chen*. Monodispersed Sulfur Nanoparticles for Lithium-Sulfur Batteries with Theoretical Performance. *Nano Letters*, 2015, 15(1), 798-802. *Highly cited paper in 2017*
 - 26) H. Chen[‡], **C. Wang**[‡], Y. Dai, J. Yang, W. Lu, L. Chen*. Rational Design of Cathode Structure of High-Rate Performance Lithium-Sulfur Batteries. *Nano Letters*, 2015, 15(8), 5443–5448.
 - 27) H. Chen[‡], **C. Wang**[‡], C. Hu[‡], J. Zhang, S. Gao, W. Lu, and L. Chen*, Vulcanization Accelerator Enabled Sulfurized Carbon Materials for High Capacity and High Stability of Lithium-Sulfur Batteries. *Journal of Material Chemistry A*, 2015, 3, 1392-1395.
 - 28) Q. Lu[‡], **C. Wang**[‡], D. Bao, H. Duan, F. Zhao, K-D. Davis, Q. Zhang, R. Wang, S. Zhao, J. Wang*, H. Huang*, X. Sun*. High-Performance Quasi-Solid-State Pouch Cells Enabled by In-situ Solidification of a Novel Polymer Electrolyte, *Energy & Environmental Materials*, 2022, <https://doi.org/10.1002/eem2.12447>. (highlighted by [Energist](#)).
 - 29) J. Zhang[‡], **C. Wang**[‡], M. Zheng, M. Ye, H. Zhai, J. Li, G. Tan, X. Tang, X. Sun. Rational Design of Air-Stable and Intact Anode-Electrolyte Interface for Garnet-type Solid-State Batteries, *Nano Energy*, 2022.102, 107672. ((*Highlighted by*)
 - 30) **C. Wang**, S. Wang, X. Liu, R. Yu, Y. Mo, X Sun*. Regulating Ion and Vacancy Content in Solid-State Halide Electrolytes for Cobalt-Free All-Solid-State Battery. *Advanced Materials*. 2022. **under review.**
 - 31) J-T Kim[‡], A. Rao, S. Deng, W. Li, F. Zhao, J. Luo, H. Duan, Y. Hu, X. Hao, **C. Wang**^{*}, C.V. Singh*, and X. Sun*. Catalytic Effect in LiI-Incorporated Sulfur Cathodes for Full Reversible All-Climate All-Solid-State Li-S Batteries. Submitted to *Nature Communications*. **under review.**
 - 32) H. Duan[‡], **C. Wang**[‡], R. Yu[‡], X. Sun. In-situ formed three-dimensional lithium metal anode in sulfide-based all-solid-state batteries. Submitted to *Angew. Chem. Int. Ed.*, **under review.**

Co-authored Publications

- 33) J. Liang, X. Li, **C. Wang**, Jung Tae Kim, J. Wang, R. Yang, X. Sun. Environmental Stability of Sulfide Solid-State Electrolytes for All-Solid-State Batteries. *Energy Materials Advances*. 2023, **in press**
- 34) Q. Liu, Y. Sun, S. Wang, Q. An, L. Duan, G. Zhao, **C. Wang**, K. Davis, H. Guo,* X. Sun*. Highly Adaptable SEI/CEI Dual-Layer by Interface Engineering for Remarkable Performance of High-Ni Solid-State Batteries. *Materials Today*, 2023, **in press**
- 35) A. Zhang, J. Wang, R. Yu, H. Zhuo, **C. Wang**, G. Li, T. Yu, Y. Wu, Z. Ren, J. Wang.* Practical Application of Li-rich Materials in Halide All-Solid-State Batteries and Interfacial Reactions between Cathodes and Electrolytes. *ACS Applied Materials & Interfaces*, 2023, **in press**
- 36) T. Mu, Y. Sun, **C. Wang**, Y. Zhao, K. Doyle-Davis, J. Liang, X. Sui, R. Li, C. Du, P. Zuo, G. Yin, Long-life silicon anodes by conformal molecular-deposited polyurea interface for lithium-ion batteries, *Nano Energy*, 2022, 103, 107829
- 37) J. Liang, Y. Sun, **C. Wang**, X. Feng, S. Ye, Y. Li, X. Ren, Q. Zhang, J. Liu, X. Sun. In-situ Formed

- Electron-shielding Interphase of Garnet Electrolyte for Dendrite-free Solid-State Lithium Metal Batteries, **Energy Storage Materials**, 2022, **under review**
- 38) E. Jin, K. Tantratian, C. Zhao, A. Codirenzei, L. Goncharova, **C. Wang**, F. Yang, Y. Wang, P. Pirayesh, J. Guo, L. Chen, X. Sun, Y. Zhao*, Ionic Conductive and Highly-Stable Interface for Alkali Metal Anodes, **Small**, 2022, 2203045
 - 39) G. Li, Z. Ren, H. Zhuo, **C. Wang**, B. Xiao, J. Lian, R. Yu, T. Ling, A. Li, T. Yu, W. Huang, A. Zhang, Q. Zhang, J. Wang*, X. Sun*. Facet-dependent Thermal and Electrochemical Degradation of Lithium-rich Layered Oxides. **Energy & Environmental Materials**, 2022, doi:10.1111/eem2.12473
 - 40) G. Li, Z. Ren, A. Li, R. Yu, W. Quan, **C. Wang**, T. Lin, D. Yi, Y. Liu, Q. Zhang, J. Wang, H. Yu, X. Sun, Highly Stable Surface and Structural Origin for Lithium-Rich Layered Oxide Cathode Materials, **Nano Energy**, 2022. 98, 107169.
 - 41) N Zhang, T Deng, S Zhang, **C Wang**, L Chen, C Wang, X Fan. Critical review on low-temperature Li-ion/metal batteries. **Advanced Materials**. 2022, 2107899.
 - 42) X Qi, B Liu, J Pang, F Yun, R Wang, Y Cui, C Wang, K Doyle-Davis, C. Xing, S. Fang, W. Quan, B. Li, Q. Zhang, S. Wu, S. Liu, J. Wang, X. Sun. Unveiling micro internal short circuit mechanism in a 60 Ah high-energy-density Li-ion pouch cell. **Nano Energy**, 2021, 84, 105908.
 - 43) G. Xu, L. Luo, J. Liang, S. Zhao, R. Yang, **C. Wang**, T. Yu, L. Wang, W. Xiao, J. Wang, J. Yu, X. Sun. Origin of High Electrochemical Stability of Multi-Metal Chloride Solid Electrolytes for High Energy All-Solid-State Lithium-Ion Batteries. **Nano Energy**, 2021, 92, 106674
 - 44) S. Zhang, F. Zhao, S. Wang, J. Liang, J. Wang, **C. Wang**, H. Zhang, K. Adair, W. Li, M. Li, H. Duan, Y. Zhao, R. Li, H. Huang, L. Zhang, S. Zhao, S. Lu, T-K. Sham, Y. Mo, X. Sun*, Advanced High-Voltage All-Solid-State Li-Ion Batteries Enabled by A Dual-Halogen Solid Electrolyte, **Advanced Energy Materials**, 2021, 11, 2100836
 - 45) M. He, X. Li, X. Yang, **C. Wang**, M. Zheng, R. Li, P. Zuo*, G. Yin, X. Sun*, Realizing Solid-Phase Reaction in Li-S Batteries via Localized High-Concentration Carbonate Electrolyte. **Advanced Energy Materials**, 2021, 11, 2101004
 - 46) Y. Sun, C. Zhao, K. Adair, Y. Zhao, L. Goncharova, J. Liang, **C. Wang**, J. Li, R. Li, M. Cai, T-K Sham*, X. Sun*. Regulated Lithium Plating and Stripping by a Nano-Scale Gradient Inorganic-Organic Coating for Stable Lithium Metal Anodes, **Energy & Environmental Science**, 2021, 14, 4085-4094.
 - 47) X Qi, B Liu, J Pang, F Yun, R Wang, Y Cui, **C. Wang**, K. Davis, C. Xing, S. Fang, W. Quan, B. Li, Q. Zhang, S. Wu, S. Liu, J. Wang, X. Sun*. Unveiling Micro Internal Short Circuit Mechanism in a 60 Ah High-Energy-Density Li-ion Pouch Cell, **Nano Energy**, 2021. 84, 105908.
 - 48) R. Yu, M. Banis, **C. Wang**, B. Wu, Y. Huang, S. Cao, J. Li, S. Jamil, X. Lin, F. Zhao, W. Lin, B. Chang, X. Yang, H. Huang, X. Wang, X. Sun*. Tailoring Bulk Li+ Ion Diffusion Kinetics and Surface Lattice Oxygen Activity for High-Performance Lithium-Rich Manganese-based Layered Oxides. **Energy Storage Materials**. 2021. 37, 509-520.
 - 49) X. Lin, Y Sun, Q Sun, J Luo, Y Zhao, C Zhao, X Yang, **C. Wang**, H Huo, R Li, X, Sun*. Reviving Anode Protection Layer in Na-O₂ Batteries: Failure Mechanism and Resolving Strategy. **Advanced Energy Materials**. 2021. 2003789.
 - 50) T Mu, S Lou, NG Holmes, **C. Wang**, M He, B Shen, X Lin, P Zuo, Y Ma, R Li. C. Du, J. Wang, G. Yin. X. Sun*. Reversible Silicon Anodes with Long Cycles by Multifunctional Volumetric Buffer Layers. **ACS Applied Materials & Interfaces**. 2021, 13,3, 4093-4101.
 - 51) C Zhao, Y Zhu, Q Sun, **C. Wang**, J Luo, X Lin, X Yang, Y Zhao, R Li, X. Sun*. Transition of the Reaction from Three-phase to Two-phase by Using Hybrid Conductor for High-energy-density High-Rate Solid-state Li-O₂ Battery. **Angew. Chem. Int. Ed.**. 2021, 60, 5821.
 - 52) Y. Sun, M. Amirmaleki, Y. Zhao, C. Zhao, J. Liang, **C. Wang**, K. Adair, J. Li, T. Cui, G. Wang, R. Li, T. Filleter, M. Cai, T-K Sham*, X. Sun*. Tailoring the Mechanical and Electrochemical Properties of an Artificial Interphase for High-Performance Metallic Lithium Anode. **Advanced**

- Energy Materials**. 2020, 2001139.
- 53) C Zhao, J Liang, X Li, N Holmes, **C. Wang**, J Wang, F Zhao, S Li, Q Sun, X. Yang, J. Liang, X. Lin, W. Li, R. Li, S. Zhao, H. Huang, L. Zhang, S. Lu, X. Sun*. Halide-Based Solid-State Electrolyte as an Interfacial Modifier for High Performance Solid-State Li–O₂ Batteries. **Nano Energy**, 2020, 75, 105036.
 - 54) F. Zhao, Y. Zhao, J. Wang, Q. Sun, K. Adair, S. Zhang, J. Luo, J. Li, W. Li, Y. Sun, X. Li, J. Liang, **C. Wang**, R. Li, H. Huang, L. Zhang, S. Zhao. X. Sun*. Tuning bifunctional interface for advanced sulfide-based all-solid-state batteries, **Energy Storage Materials**, 2020, 33, 139-146.
 - 55) C Yu, Y Li, W Li, KR Adair, F Zhao, M. Willans, J Liang, Y Zhao, **C. Wang**, S. Deng, R. Li, H. Huang, S. Lu, T-K Sham, Y. Huang, X. Sun*. Enabling ultrafast ionic conductivity in Br-based lithium argyrodite electrolytes for solid-state batteries with different anodes. **Energy Storage Materials**. 2020, 30, 238-249.
 - 56) S Zhang, Y Zhao, F Zhao, L Zhang, **C. Wang**, X Li, J Liang, W Li, Q Sun, C. Yu, J. Luo, K. Davis. R. Li, T-K Sham, X. Sun*. Gradiently Sodiated Alucone as an Interfacial Stabilizing Strategy for Solid-State Na Metal Batteries. **Advanced Functional Materials**. 2020, 30, 22, 2001118.
 - 57) X Li, J Liang, X Yang, KR Adair, **C. Wang**, F Zhao, X Sun*. Progress and perspectives on halide lithium conductors for all-solid-state lithium batteries, **Energy & Environmental Science**, 2020, 13 (5), 1429-1461.
 - 58) J. Liang, X. Li, S. Wang, K. Adair, W. Li, Y. Zhao, **C. Wang**, Y. Hu, L. Zhang, S. Zhao, and S. Lu, Y. Mo. X. Sun*. Site-Occupation-Tuned Superionic Li_xScCl_{3+x} Halide Solid Electrolytes for All-Solid-State Batteries. **Journal of the American Chemical Society**.2020. 142 (15), 7012-7022.
 - 59) X Li, J Liang, MN Banis, J Luo, **C. Wang**, W Li, X Li, Q Sun, Y Hu, Q Xiao, X. Sun*. Totally compatible P₄S_{10+n} cathodes with self-generated Li⁺ pathways for sulfide-based all-solid-state batteries, **Energy Storage Materials**, 2020, 28, 325-333.
 - 60) F Zhao, Q Sun, C Yu, S Zhang, K Adair, S Wang, Y Liu, Y Zhao, J Liang X. Sun*. Ultrastable Anode Interface Achieved by Fluorinating Electrolytes for All-Solid-State Li Metal Batteries, **ACS Energy Letters**, 5 (4), 1035-1043.
 - 61) F Zhao, J Liang, C Yu, Q Sun, X Li, K Adair, **C. Wang**, Y Zhao, S Zhang, X. Sun*. A Versatile Sn-Substituted Argyrodite Sulfide Electrolyte for All-Solid-State Li Metal Batteries, **Advanced Energy Materials**. 2020, 28, 325-333.
 - 62) S. Zhang, Y. Zhao, F. Zhao, X. Yang, Y. Zhao, **C. Wang**, J. Liang, A. Koo, R. Li, X. Sun*. On the Cycling Performance of Na-O₂ Cells: Revealing the Impact of the Superoxide Crossover toward the Metallic Na Electrode. **Advanced Functional Materials**. 2020. 28 (35), 1801904.
 - 63) X Lin, J Wang, X Gao, S Wang, Q Sun, J Luo, C Zhao, Y Zhao, X Yang, **C. Wang**, R. Li, X. Sun*. 3D Printing of Free-Standing “O₂ Breathable” Air Electrodes for High-Capacity and Long-Life Na–O₂ Batteries. **Chemistry of Materials**, 2020, 32 (7), 3018-3027.
 - 64) J. Liang, N. Chen, X. Li, X. Li, K. Adair, J. Li, **C. Wang**, C. Yu, M. Banis. L. Zhang, S. Zhao, S. Lu, H. Huang, R. Li, Y. Huang, X. Sun*. Li₁₀Ge(P_{1-x}Sb_x)₂S₁₂ Lithium-Ion Conductors with Enhanced Atmospheric Stability, **Chemistry of Materials**. 2020. 32 (6), 2664-2672.
 - 65) S. Deng, X. Li, Z. Ren, W. Li, J. Luo, J. Liang, J. Liang, M. Banis, M. Li, Y. Zhao, X. Li, **C. Wang**, Y. Sun, Q. Sun, R. Li, Y. Hu, H. Huang, L. Zhang, S. Lu, Jun Luo, X. Sun*. Dual-functional interfaces for highly stable Ni-rich layered cathodes in sulfide all-solid-state batteries, **Energy Storage Materials**. 2020, 27, 117-123.
 - 66) X. Li, J. Liang, J. Luo, M. Banis, **C. Wang**, W. Li, S. Deng, C. Yu, F. Zhao, Y. Hu, T-K Sham, L. Zhang, S. Zhao, S. Lu, H. Huang, R. Li, K. Adair, X. Sun*. Air-stable Li₃InCl₆ electrolyte with high voltage compatibility for all-solid-state batteries. **Energy & Environmental Science**. 2019. 12, 2665-2671.
 - 67) X. Li, J. Liang, J. Luo, **C. Wang**, X. Li, Q. Sun, R. Li, L. Zhang, R. Yang, S. Lu, H. Huang, X. Sun*. High-Performance Li–SeS_x All-Solid-State Lithium Batteries. **Advanced Materials**. 2019, 31,

1808100.

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Patents

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Conferences

- 99) **Invited Talk: C. Wang**. H. Huang, X. Sun, All-Solid-State Lithium Battery: From Material Synthesis, Interface Design, to Pouch Cell. **Canadian Chemical Engineering Conference 2021**,

October 24-27, 2021, Montreal. Canada

- 100) **Oral presentation:** C. Wang, H. Huang, X. Sun, All-Solid-State Lithium Battery with Sulfide Electrolyte: from Interface Design to Full Cell Engineering. **240th ECS Meeting**, October 10-14, 2021, Orlando, Florida. The USA.
- 101) **Oral Presentation:** C. Wang, X. Sun, Interface Engineering of Sulfide Electrolyte-Based All-Solid-State Lithium Batteries. **CSME-CFDSC Congress 2019**, June 2-5. London, Ontario. Canada.
- 102) **Oral Presentation:** C. Wang, X. Sun, Interface Engineering of Sulfide Electrolyte-Based All-Solid-State Lithium Batteries. **2019 CCEM Symposium**. May 30, 2019, McMaster, Ontario, Canada
- 103) **Oral Presentation:** C. Wang, X. Sun, A Dual-Core-Shell Structured Cathode for Sulfide-Based All-Solid-State Lithium-Ion Batteries. **2018 ECS symposium**. London, Ontario, Canada. December 12, 2018.
- 104) **Oral Presentation:** C. Wang, W. He, Y. Tong, R. Zhao, Co-existing of analog and digital resistive switching in FeO_x based electronic synapse. March 28- April 1. 2016. **MRS spring meeting**, Phoenix, Arizona, USA.
- 105) **Invited Talk:** C. Wang, W. He, Y. Tong, L. Song, R. Zhao, The Impact of the Electroforming on the Memristor Performance. **15th Non-Volatile Memory Technology Symposium (NVMTS 2015)**. Oct 12th –14th, 2015, Tsinghua University, Beijing, China.
- 106) **Poster:** C. Wang, X. Sun, Protected Lithium Metal Enabling All-Solid-State Lithium-Ion Batteries with High Energy Density. **2017 MRS Fall Meeting**. Boston, USA. November 26 - December 1. 2017.
- 107) **Poster:** C. Wang, F. Zhao, W. Li, X. Sun. Surface Engineering of Sulfide-Based All-Solid-State Lithium Batteries: Challenges and Strategies. **2019 CAMBR Symposium**. April 17, Western University, London, On. Canada.
- 108) **Poster:** C. Wang, H. Chen, W. Dong, W. Lu, L. Chen. From Sulfur-Amine Solution to Carbon Nanotubes (MWNT) – Sulfur Nanocomposite for High-Performance Lithium-Sulfur Batteries. **The 8th Sino-US Symposium on Nanoscale Science and Technology**, September 5 ~7th, 2013, Hang Zhou, Zhe Jiang University. (Abstract No. 4P-034).
- 109) **Poster:** C. Wang, H.Chen, W. Dong, W. Lu, L. Chen. From Sulfur-Amine Solution to Carbon Nanotubes (MWNT) – Sulfur Nanocomposite for High-Performance Lithium-Sulfur Batteries. **Chi nano-2013**, September 25 ~26th, 2013, Su Zhou, International Expo Centre. (Abstract No. 6F - 28).
- 110) **Poster:** C. Wang, H. Chen, W. Dong, W. Lu, L. Chen. From Sulfur-Amine Solution to Carbon Nanotubes (MWNT) – Sulfur Nanocomposite for High-Performance Lithium-Sulfur Batteries. **The 17th National Electrochemical Conference**. November 15 ~19th, 2013, Su Zhou, Soochow University. (Abstract No. 5P-10286).

Teaching and Mentoring Experience

Teaching

- TA for MME 2260-Industrial Materials (2017 Fall, Prof. Robert Klassen) (70 hours)
- TA for MME 2285-Engineering Experimentation (2017 Winter. Prof. Jun Yang) (70 hours)
- TA for MME 2260-Industrial Materials (2018 Fall, Prof. Robert Klassen) (70 hours)
- TA for MME 2213-Engineering Dynamics (2018 Winter, Prof. Dan Langohr) (70 hours)
- TA for MME 2260-Industrial Materials (2019 Fall, Prof. Robert Klassen) (70 hours)

Mentoring

As **R&D director** at GLABAT solid-state battery inc., I lead a research team to develop practical all-solid-state pouch cells.

As a **co-supervisor** with Prof. Sun, I mentor four industrial postdoctoral researchers, two scientists, and two research engineers. Meanwhile, I guide several junior graduates for my supervisor: Justin Kim,

Matthew Zheng, Kieran Davis, Adam, and Peiman Mardani.

Providing guidelines on undergraduate research projects at Western

Project name: Sunstang Solar Car Project

Undergraduate students: Sana Zafar, Muhammad Ali, and Iffah Razak.

Leadership and Professional Services

Early Career Research Editorial Board of **Materials Today Energy** 2022—2024

Topic Editor of Crystals 2021, 05—present

Serving as a topic editor for the open-access journal **Crystals** and called for two special issues on “[Electrolyte Design and Interface Engineering toward Safer Energy Storage.](#)” And “[Advanced All-Solid-State Lithium-Ion and Lithium-Sulfur Batteries.](#)”

Journal Reviewer (some of them were co-reviewed with my supervisor) 2014, 03—present

Nature Communications, Energy & Environmental Science, Advanced Materials, Advanced Energy Materials, Advanced Functional Materials; Nano Letters, Nano Energy, Energy Storage Materials; Small, etc.

Chairman of Student Union of Department of Science at USTA 2009, 09—2010, 10