

Xiaolei Wang, Ph.D.

Tenure-Track Assistant Professor

Department of Chemical & Materials Engineering
University of Alberta
12-241 Donadeo Innovation Centre for Engineering
9211-116 Street NW, Edmonton, AB T6G 1H9, Canada
Work: 1-(780) 492-7164
Fax: 1-(780) 492-2881
Email: xiaolei.wang@ualberta.ca
Personal Website: <https://sites.google.com/view/nanofacelab/home?authuser=0>



PROFESSIONAL APPOINTMENTS & EDUCATION

Aug. 2019-Present	<i>Tenure-Track Assistant Professor</i> Department of Chemical and Materials Engineering, University of Alberta <i>Adjunct Professor</i> Department of Chemical and Materials Engineering, Concordia University Department of Chemistry and Biochemistry, Concordia University
Aug. 2017-Aug. 2019	<i>Tenure-Track Assistant Professor</i> Department of Chemical and Materials Engineering, Concordia University
Nov. 2013-Jul. 2017	<i>Postdoctoral Fellow Researcher</i> Department of Chemical Engineering, University of Waterloo
Sep. 2007-Jun. 2013	<i>Ph.D.</i> in Chemical and Biomolecular Engineering University of California, Los Angeles (UCLA), U.S.A
Sep. 2004-Jul. 2007	<i>M.S.</i> in Chemical Engineering Tianjin University, P.R. China
Sep. 2000-Jun. 2004	<i>B.S.</i> in Chemical Engineering (Polymer Chemical Engineering) Dalian University of Technology, P.R. China

HONORS AND AWARDS

2021	Early Career Scholar in Materials Science To promote and recognize outstanding research by future leaders in materials science from the Journal of Materials Research
2019	Concordia University Research Chair-Young Scholar For significant contributions to Concordia's research in areas of strategic importance
2018	Petro-Canada Young Investigator Award To outstanding and innovative emerging researchers for significant contributions to the training environment of the University and has an impact on society at large
2018	EEST2018 Organization Award For service and contribution to organizing and promoting International Academy of Electrochemical Energy Science (IAOEES) events
2018	NSERC Discovery Accelerator Supplement Award Natural Sciences and Engineering Research Council of Canada

PROFESSIONAL ACTIVITIES

Conference/Symposia Organized:

1. “Beyond Lithium-Ion Batteries Chemistry”, The 105th Canadian Chemistry Conference and Exhibition, Calgary, Canada, June 2022. Symposia Organizer/Co-Chair.
2. “A05-Battery Recycling and Reuse”, The 241st ECS Meeting, Vancouver, Canada, May 2022. Symposium Co-Chair.
3. “Electrocatalysis for Energy Sustainability”, The 26th Canadian Symposium on Catalysis, Vancouver, Canada, May 2022. Session Organizer/Co-Chair.
4. “Advanced Energy Materials towards Beyond Lithium-Ion Batteries”, The 71st Canadian Chemical Engineering Conference, Montreal, Canada, October 2021. Symposium Lead Organizer/Co-Chair.
5. The International Conference on Electrochemical Energy Science and Technology (EEST2018), Niagara Falls, Canada, August 2018. Conference Committee Member.
6. “Clean Energy and Green Gas Technologies”, XXIX International Congress of Chemical Engineering Incorporating the 68th Canadian Chemical Engineering Conference, Toronto, Canada, October 2018. Session Co-Chair.
7. The 7th Advanced Functional Materials and Devices (AFMD) Conference, Havana, Cuba, December 2017. Session Co-Chair.

Journal Editorship:

1. Associate Editor, *Frontiers in Chemistry*, Electrochemistry Section, 2021-present;
2. Editorial Member, Young Leader Committee, *Energy and Environmental Materials*, 2021-present;
3. Editorial Member, International Editorial Board, *Sustainability: Sustainable Chemistry*, 2018-present;
4. Member, International Editorial Board, *Current Trends in Chemical Engineering and Processing Technology*, 2019-present;
5. Lead Guest Editor, *Frontiers in Chemistry*, special issue on “Modern Approaches for Designing Energy Materials for Hydrolysis Systems”, 2020;
6. Guest Editor, *Nanomaterials*, special issue on “Nanomaterials for Energy Storage and Nanoscale Fabrication”, 2019;
7. Lead Guest Editor, *International Journal of Electrochemistry*, special issue on “Nanoarchitectural Design of Materials for Electrochemical Energy Storage”, 2016;
8. Lead Guest Editor, *Journal of Nanomaterials*, special issue on “Nanostructured Materials for Energy Conversion and Storage”, 2015.

Editorial Reviewer:

Served as peer reviewer for the following journals:

Springer Nature Publications: *Nature Communications*, *Nano-Micro Letters*, *SN Applied Sciences*, *Ionics*

Wiley Publications: *Angewandte Chemie*, *Advanced Materials*, *Advanced Energy Materials*, *Advanced Functional Materials*, *Small*, *Energy Technology*, *ChemSusChem*, *ChemistrySelect*, *ChemElectroChem*, *ChemPlusChem*, *Journal of Applied Polymer Science*, *Carbon Energy*, *Advanced Materials Interfaces*

Cell Publications: *Joule*, *Chem*

ACS Publications: *Nano Letters*, *Chemistry of Materials*, *ACS Catalysis*, *ACS Omega*, *ACS Applied Materials and Interfaces*, *ACS Sustainable Chemistry & Engineering*, *ACS Energy Letters*, *ACS Applied Nano Materials*, *The Journal of Physical Chemistry*, *ACS Applied Energy Materials*

RSC Publications: *Journal of Materials Chemistry A, Physical Chemistry Chemical Physics, Sustainable Energy and Fuels, Chemical Communications, Nanoscale, Materials Chemistry Frontiers, RSC Advances*

Elsevier Publications: *Nano Energy, Journal of Power Sources, Chemical Engineering Journal, Materials Today Chemistry, Materials Today Energy, Applied Catalysis B: Environmental, Journal of Alloys and Compounds, Applied Surface Science, Journal of Colloid and Interface Science, Electrochimica Acta, Progress in Natural Science: Materials International, Journal of Energy Chemistry, Catalysis Today, Energy Report, Colloids and Surfaces A, Carbon*

MRS Publications: *MRS Energy & Sustainability, Journal of Materials Research*

ECS Publications: *Journal of The Electrochemical Society, Electrochemistry Communications*

Others: *Electrochemical Energy Review, Frontiers in Chemistry, Journal of Nanoscience and Nanotechnology, Nanomaterials*

Proposal Reviewer:

1. Natural Sciences and Engineering Research Council of Canada (NSERC)
NSERC Discovery Program (1 proposal)
NSERC College and Community Innovation Program (1 proposal)
NSERC Author B. McDonald Fellowship (1 application)
NSERC Alliance Grant Program (1 application)
2. Mitacs Canada
Mitacs Accelerate Program (6 proposals)
Mitacs Elevate Program (3 proposals)
Mitacs Thematic Elevate Program (3 proposals)
3. Social Sciences and Humanities Research Council of Canada (SSHRC)
New Frontiers in Research Fund-Exploration Program (NFRF-E) (17 proposals)
New Frontiers in Research Fund-Transformation Program (NFRF-E) (1 proposals)
4. Canada-Israel Industrial Research and Development Foundation (CIIRDF)
Canada-Israel Collaborative R&D Program (1 proposal)

Professional Affiliations:

1. Review Panel for Clean Technology-Mitacs Thematic Elevate Program
2. Review Panel Committee Member, New Frontiers in Research Fund (NFRF)
3. Standard Council Canada Mirror Committee, Electric Road Vehicles and Electric Industrial Trucks
4. American Chemical Society (ACS);
5. Materials Research Society (MRS);
6. Canadian Society for Chemical Engineering (CSCChE);
7. The Electrochemical Society (ECS);
8. International Academy of Electrochemical Energy Science (IAOEES).

PRESENTATIONS

(A) Invited Research Lectures:

1. Association of Chinese Canadian Professors, Edmonton, Canada, August 19, 2020;
2. Tiangong University, Tianjin, P.R. China, January 03, 2020;
3. University of Science and Technology Beijing, Beijing, P.R. China, January 02, 2020;
4. Yantai University, Yantai, P.R. China, December 30, 2019;

5. Guangzhou Institute of Energy Conversion, Chinese Academy Sciences, Guangzhou, P.R. China, December 20, 2019;
6. Henan Normal University, Xinxiang, P.R. China, December 18, 2019;
7. Hebei University of Technology, Tianjin, P.R. China, June 17, 2019;
8. Concordia University (Department of Chemistry), Montreal, Canada, November 16, 2018;
9. Henan Normal University, Xinxiang, P.R. China, June 05, 2018;
10. Concordia Centre for Composites, Montreal, Canada, December 12, 2017;
11. University of Saskatchewan, Saskatoon, Canada, June 03, 2016.

(B) Keynote and Invited Lectures:

1. (Invited) Emissions Reduction Alberta (ERA)'s Show-and-Tell Event (May 10, 2022), Virtual;
2. (Invited) Canada's Rising Stars in Electrochemical Systems Symposium (April 28-29, 2022), Virtual;
3. (Invited) The 241st ECS Meeting (May 29-June 02, 2022), Vancouver, Canada;
4. (Keynote) VEBLEO Webinar on Energy Materials and Technology (February 25-28, 2022), Virtual;
5. (Keynote) Graphene & 2D Materials International Conference, GrapheneCanada2021 (December 01-02, 2021), Virtual;
6. (Invited) 70th Canadian Chemical Engineering Conference (October 26-October 30, 2020), Ottawa (Fully Virtual), Canada;
7. (Invited) The 26th Canadian Symposium on Catalysis (June 09-June 12, 2020), Vancouver, Canada;
8. (Invited) The 237th ECS Meeting with the 18th International Meeting on Chemical Sensors (IMCS2020) (May 10-May 14, 2020), Montreal, Canada;
9. (Keynote) 2019 Wiley-Guangdong University of Technology International Conference on Energy Chemistry (December 20-December 22, 2019), Guangzhou, P.R. China;
10. (Keynote) 69th Canadian Chemical Engineering Conference (October 20-October 23, 2019), Halifax, Canada;
11. (Invited) 2019 Symposium on Energy Materials and Defect Chemistry, Chinese Chemical Society (June 18-June 20, 2019), Changsha, China;
12. (Invited) ECS Canadian Section Fall 2018 Meeting (November 10, 2018), Montreal, Canada;
13. (Keynote) XXIX International Congress of Chemical Engineering Incorporating the 68th Canadian Chemical Engineering Conference (October 28-October 31, 2018), Toronto, Canada;
14. (Invited) The International Conference on Electrochemical Energy Science and Technology (EEST2018) (August 13-August 17, 2018), Niagara Falls, Canada;
15. (Invited) 2016 Yuelu Symposium for International Young Scholars (December 25-December 27, 2016), Changsha, P.R. China.

RESEARCH GRANTS (*PI: Principal Investigator; PA: Principal Applicant; CoA: Co-Applicant*)

1. 2017/08-2019/04 **Concordia University Start-Up Grant**, PI
2. 2018/04-2023/03 **NSERC Discovery Grant**, PI
3. 2018/04-2021/03 **NSERC Discovery Accelerator Supplement Grant**, PI
4. 2018/04-2023/03 **NSERC Discovery Launch Supplement Grant**, PI
5. 2018/05-2019/04 **Concordia ENCS Capital Research Innovation Fund**, PA
6. 2018/05-2019/04 **Concordia Facility Optimization Program Grant**, PI
7. 2018/05-2019/04 **Concordia Team Start-Up Program Grant**, PA
8. 2018/05-2019/04 **Petro-Canada Young Innovation Award**, PI

9. 2018/10-2020/10 CQMF/QCAM Interinstitutional Collaboration Research Grant, PI
10. 2018/10-2020/10 CQMF/QCAM Interinstitutional Collaboration Research Grant, CoA
11. 2019/05-2021/05 Horizon Postdoctoral Fellowship Grant, PA
12. 2019/04-2020/04 Concordia Team Accelerator Program Grant, PA
13. 2019/04-2024/04 Concordia University Research Chairs Program Grant (declined), PI
14. 2019/08-2021/04 University of Alberta Start-Up Grant, PI
15. 2020/04-2024/04 Future Energy System Grant, PI
16. 2020/04-2023/04 New Frontiers in Research Fund-Exploration 2019 Grant, PI
17. 2022/04-2024/04 NSERC Alliance-Alberta Innovates Grant, PI
18. 2022/02-2022/06 University of Alberta-FoE Seed Grant Program, PI
19. 2022/09-2023/09 Institute for Oil Sands Innovation at the University of Alberta, PI

HQP TRAINING RECORD

(A) Oral and Poster Presentations from Dr. Wang's Group:

1. (Poster) Lu Chen, Xiaolei Wang*, *Ultrafine $\text{Li}_4\text{Ti}_5\text{O}_{12}$ Nanocrystals as Building Blocks for High-Power Lithium Battery Anode*, The International Conference on Electrochemical Energy Science and Technology (EEST2018), August 2018, Niagara Falls, Canada;
2. (Oral) Zhixiao Xu, Xiaolei Wang*, *Hierarchical Carbon-based Nanomaterials for Green Energy Devices*, XXIX International Congress of Chemical Engineering Incorporating the 68th Canadian Chemical Engineering Conference, October 2018, Toronto, Canada;
3. (Oral) Lu Chen, Xiaolei Wang*, *Bimetallic CoNi Alloy Nanoparticles Embedded in Nitrogen-Doped Pomegranate-Like Carbon Structure as Bifunctional Electrocatalyst*, the 69th Canadian Chemical Engineering Conference, October 2019, Halifax, Canada;
4. (Oral) Zhixiao Xu, Xiaolei Wang*, *Hierarchical Carbon Nanosheet Arrays for Lithium Metal Battery and Water Splitting*, the 69th Canadian Chemical Engineering Conference, October 2019, Halifax, Canada;
5. (Poster) Zhixiao Xu, Xiaolei Wang*, *Hierarchical Carbon-based Nanomaterials for Green Energy Devices*, the 69th Canadian Chemical Engineering Conference, October 2019, Halifax, Canada;
6. (Oral) Zhiping Deng, Xiaolei Wang*, *Integrating Multiple Advantages into 1 Nm Pt_3Ni Bimetallic Alloy Nanowires for Oxygen Reduction Reaction*, the 237th ECS Meeting with the 18th International Meeting on Chemical Sensors (IMCS2020), May 2020, Montreal, Canada;
7. (Invited Oral) Zhixiao Xu, Xiaolei Wang*, *Large-Area Ni-Mo₂C-C Hybrid Hierarchical Arrays for Water Electrolysis*, the 26th Canadian Symposium on Catalysis, June 2020, Vancouver, Canada.
8. (Oral) Zhiping Deng, Xiaolei Wang*, *Revealing the Role of Mo Doping in Promoting Oxygen Reduction Reaction Performance of Pt_3Co Nanowires*, the 71st Canadian Chemical Engineering Conference, October 2021, Montreal, Canada;
9. (Oral) Wenjing Deng, Xiaolei Wang*, *Three-dimensional Porous Carbon-Catalyst Structure as Sulfur Host for High-Performance Lithium-Sulfur Batteries*, the 71st Canadian Chemical Engineering Conference, October 2021, Montreal, Canada;

(B) Student's Awards (Scholarships, fellowships, and travel awards):

Lu Chen	International Tuition Waiver Award Concordia University (2018-2022)	\$47,000
Lu Chen	Conference & Exposition Award Concordia University (2018 Summer)	\$800
Zhixiao Xu	International Tuition Waiver Award Concordia University (2018-2022)	\$47,000

Curriculum Vitae-Xiaolei Wang, Ph.D.

Zhixiao Xu	Conference & Exposition Award Concordia University (2018 Fall)	\$1,000
Amirreza Karimi	ENCS/SGS Entrance Award Concordia University (2018)	\$5,000
Lu Chen	Dominic D'Alessandro Fellowship Concordia University (2018-2019)	\$1,000
Xiaolan Gao	International Tuition Waiver Award Concordia University (2019-2023)	\$47,000
Hassina Tabassum	Horizon Postdoctoral Fellowship (declined) Concordia University (2019-2021)	\$95,000
Zhixiao Xu	Conference & Exposition Award Concordia University (2019 Fall)	\$1,000
Zhiping Deng	Captain Thomas Farrell Greenhalgh Memorial Graduate Scholarship University of Alberta (2019 Fall)	\$2,500
Wenjing Deng	Captain Thomas Farrell Greenhalgh Memorial Graduate Scholarship University of Alberta (2020 Spring)	\$2,500
Zhixiao Xu	Student Travel Award for CSC2020 Symposium Canadian Catalysis Foundation (CCF) (2020)	\$675
Yimei Chen	Doctoral Scholarship for Studying Abroad China Scholarship Council (2020-2024)	\$105,600
Yicheng Wang	Doctoral Scholarship for Studying Abroad China Scholarship Council (2021-2025)	\$105,600
Zhixiao Xu	Captain Thomas Farrell Greenhalgh Memorial Graduate Scholarship University of Alberta (2021 Fall)	\$2,000
Nianji Zhang	Captain Thomas Farrell Greenhalgh Memorial Graduate Scholarship University of Alberta (2021 Fall)	\$2,000
Wenjing Deng	Captain Thomas Farrell Greenhalgh Memorial Graduate Scholarship University of Alberta (2019 Fall)	\$3,500
Zhixiao Xu	Chinese Government Award for Outstanding Self-Finance Students Abroad (2022)	\$6,000

JOURNAL PUBLICATIONS (“*” corresponding author, Total citation: >4800, H-index: 38)

Year 2022

49. High-Donor Electrolyte Additive Enabling Stable Aqueous Zinc-Ion Batteries.
Wenjing Deng, Zhixiao Xu, Xiaolei Wang*
Submitted.
48. Upcycling Spent Alkaline Batteries into Rechargeable Zinc-Ion Batteries.
Zhixiao Xu, Nianji Zhang, Xiaolei Wang*
Submitted.
47. Polymer Hydrogel Electrolytes for Flexible and Multifunctional Zinc-Ion Batteries.
Rujiao Ma, Zhixiao Xu, Xiaolei Wang*
Energy and Environmental Materials, 2022, Accepted.
46. Efficient Data Mining Algorithms for Screening Cathode Materials: Topology Modification Strategy to Enhance Sodium Storage Properties of Ba Substituent $\text{Na}_3\text{V}_2(\text{PO}_4)_3$.
Zhen Li, Xiaokai Ma, Wenjing Deng, Ji Yan*, Xiaolei Wang*, Fujun Liu, Lizhen Wang*
Submitted.
45. Upcycling of Spent LiCoO_2 Cathodes via Nickel- and Manganese-Doping.
Nianji Zhang, Wenjing Deng, Zhixiao Xu, Xiaolei Wang*
Carbon Energy, 2022, Accepted.
44. Recent Advances in Development of Carbon-based Materials for CO_2 Capture.
Samia ben Hammouda, Ali Zaker, Xiaolei Wang, Xia Li, Zhi Chen*
In revision.
43. Modulating Intrinsic Properties of Platinum-Cobalt Nanowires for Enhanced Intrinsic Electrocatalysis.
Fangfang Chang, Yongpeng Liu, Lin Yang, Qing Zhang, Juncui Wei, Xiaolei Wang, Zhengyu Bai*
New Journal of Chemistry, 2022, Accepted.
42. Engineering Organic Anode and Electrolyte towards Ultra-Fast-and-Stable Zinc-Ion Batteries and Supercapacitors.
Zhixiao Xu, Matthew Li, Wenyuan Sun, Tian Tang, Jun Lu, Xiaolei Wang*
Advanced Materials, 2022, Accepted.
41. Mechanism Investigation of Enhanced Electrochemical H_2O_2 Production Performance on Oxygen-rich Hollow Porous Carbon Spheres.
Zhiping Deng, Xiaolei Wang*
Nano Research, 2022, Accepted.
40. Efficient Zn Metal Anode Enabled by O, N-Codoped Carbon Microflowers.
Zhixiao Xu, Song Jin, Nianji Zhang, Wenjing Deng, Min Ho Seo, Xiaolei Wang*
Nano Letters, 2022, 22(3), 1350-1357.
39. Hetero-Architected Core-Shell $\text{NiMoO}_4@\text{Ni}_9\text{S}_8/\text{MoS}_2$ Nanorods Enabling High-Performance Supercapacitors.
Lu Chen, Wenjing Deng, Zhi Chen, Xiaolei Wang*,
Journal of Materials Research, 2022, 37, 284-293. (Invited Feature Article for Special Issue on Early Career Scholars in Materials Science 2022)
38. Ultrafast, Long-life, High-loading, and Wide-temperature Zinc Ion Supercapacitor.
Zhixiao Xu, Rujiao Ma, Xiaolei Wang*
Energy Storage Materials, 2022, 46, 233-242.
37. Designing Gradient Solid Electrolyte Interphase for Stable Lithium Metal Batteries.

Wenjing Deng, Xiaolei Wang*

Green Energy & Environment, **2022**, *Accepted*.

36. Ultrafine $\text{Li}_4\text{Ti}_5\text{O}_{12}$ Nanocrystals as Building Blocks for Ultrahigh-Power Lithium-Ion Battery Anodes.

Zhiping Deng, Zhixiao Xu, Wenjing Deng, Xiaolei Wang*

Journal of Power Sources, **2022**, *521*, 230970.

35. Hybrid Interlayer Enables Dendrite-Free and Deposition-Modulated Zinc Anodes.

Wenjing Deng, Nianji Zhang, Xiaolei Wang*

Chemical Engineering Journal, **2022**, *432*, 134378.

34. Regulating the Lattice Strain of Platinum-Copper Catalysts for Enhancing Collaborative Electrocatalysis.

Fangfang Chang, Yongpeng Liu, Qing Zhang, Zhichao Jia, Xiaolei Wang, Lin Yang*, Zhengyu Bai*

Inorganic Chemistry Frontiers, **2022**, *9*, 249-258.

33. Revealing the Role of Mo Doping in Promoting the Oxygen Reduction Reaction Performance of Pt_3Co Nanowires.

Zhiping Deng, Wanying Pang, Zhehui Jin, Xiaolei Wang*

Journal of Energy Chemistry, **2022**, *66*, 16-23.

Year 2021

32. Recycling and Upcycling of Spent LIB Cathodes: A Comprehensive Review.

Nianji Zhang, Zhixiao Xu, Wenjing Deng, Xiaolei Wang*

Electrochemical Energy Review, **2022**, *Accepted*.

31. A composite PEO Electrolyte with Amide-based Polymer Matrix for Suppressing Lithium Dendrite Growth in All-Solid-State Lithium Battery.

Menghan Ge, Xiaoyu Zhou, Yinping Qin, Yang Liu*, Jingjing Zhou, Xiaolei Wang*, Bingkun Guo*

Chinese Chemical Letters, **2021**, *Accepted*.

30. Modulating the Multiple Intrinsic Properties of Platinum-Iron Alloy Nanowires towards Enhancing Collaborative Electrocatalysis.

Fangfang Chang, Juncai Wei, Qing Zhang, Zhichao Jia, Yongpeng Liu, Lin Yang*, Xiaolei Wang, Zhengyu Bai*

Materials Chemistry Frontiers, **2021**, *8(21)*, 8118-8126. (Selected by the themed collection: HOT Papers.)

29. Building Core-Shell $\text{Ni}_9\text{S}_8/\text{MoS}_2@/\text{NiMoO}_4$ Heterostructured Nanorods for Enhanced Water Splitting.

Lu Chen, Zhiping Deng, Zhi Chen, Xiaolei Wang*

Advanced Materials Interfaces, **2021**, *8(21)*, 2101483.

28. Enhanced Polysulfides Regulation via Honeycomb-Like Carbon with Catalytic MoC for Lithium-Sulfur Batteries.

Wenjing Deng, Zhixiao Xu, Zhiping Deng, Xiaolei Wang*

Journal of Materials Chemistry A, **2021**, *9*, 21760-21770. (Selected by the themed collection: HOT papers.)

27. N, O-codoped Carbon Nanosheet Array Enabling Stable Lithium Metal Anode.

Zhixiao Xu, Luyao Xu, Zhixin Xu, Zhiping Deng, Xiaolei Wang*

Advanced Functional Materials, **2021**, *31(40)*, 2102354.

26. LiPAA with Short-chain Anion Facilitating Li_2S_x ($x \leq 4$) Reduction in Lean-electrolyte Lithium-sulfur Battery.

Jizong Zhang, Mingming Chen*, Yu Si, Jian Guo, Tianli Wu, Chengyang Wang, Xiaolei Wang*

Energy & Environmental Materials, **2021**, *Accepted*.

25. Hierarchical Ni-Mo₂C/N-doped Carbon Mott-Schottky Array for Water Electrolysis.

Zhixiao Xu, Song Jin, Min Ho Seo*, Xiaolei Wang*

Applied Catalysis B: Environmental, **2021**, *292*, 120168.

24. 3D Hierarchical Carbon-Rich Micro/Nano-Materials for Energy Storage and Catalysis.

Zhixiao Xu, Wenjing Deng, Xiaolei Wang*

Electrochemical Energy Reviews, **2021**, *4*, 269-335.

23. N,S-Codoped Hollow Carbon Dodecahedron/Metal Sulfides Composites Enabling High-Performance Lithium-Ion Intercalation.

Lu Chen, Zhi Chen, Xudong Liu, Zhibin Ye, Xiaolei Wang*

Electrochemical Science Advances, **2021**, *1*(4), e2100001.

22. Investigation of Advanced Catalytic Effect of Co₃O₄ Nanosheets Modified Carbon Felts as Vanadium Flow Battery Electrodes.

Dongjiang You*, Jingyuan Lou, Xiaoqiang Li, Yanli Zhou, Xueqin Sun, Xiaolei Wang*

Journal of Power Sources, **2021**, *494*, 229775.

21. Realizing High-Performance Lithium-Sulfur Batteries via Rational Design and Engineering Strategies.

Wenjing Deng, Jason Phung, Ge Li*, Xiaolei Wang*

Nano Energy, **2021**, *82*, 105761.

20. Bimetallic Metal-Organic Framework Derived Doped Carbon Nanostructures as High-Performance Electrocatalyst towards Oxygen Reactions.

Lu Chen, Zhi Chen, Xudongn Liu, Xiaolei Wang*

Nano Research, **2021**, *14*, 1533-1540.

Year 2020

19. Platinum-Palladium Alloy Nanotetrahedra with Tuneable Lattice-Strain for Enhanced Intrinsic Activity.

Ruifang Miao, Fangfang Chang*, Mengyun Ren, Xianhong He, Lin Yang*, Xiaolei Wang, Zhengyu Bai*

Catalysis Science and Technology, **2020**, *10*(18), 6173-6179.

18. Strained Lattice Platinum-Palladium Alloy Nanowires for Efficient Electrocatalysis.

Mengyun Ren, Fangfang Chang, Ruifang Miao, Xianhong He, Lin Yang, Xiaolei Wang, Zhengyu Bai*

Inorganic Chemistry Frontiers, **2020**, *7*(8), 1713-1718.

17. Hollow Waxberry-Like Cobalt-Nickel Oxide/S, N-Codoped Carbon Nanospheres as Trifunctional Electrocatalyst for Oxygen and Hydrogen Reactions.

Qing Zhang, Wenjie Han, Zhixiao Xu, Yinling Li, Lu Chen, Zhengyu Bai*, Lin Yang, Xiaolei Wang*

RSC Advances, **2020**, *10*, 27788-27793.

16. Bimetallic CoNi Alloy Nanoparticles Embedded Pomegranate-Like Nitrogen-Doped Carbon Sphere as High-Performance Bifunctional Electrocatalyst.

Lu Chen, Zhixiao Xu, Wenjie Han, Qing Zhang, Zhengyu Bai, Zhi Chen, Ge Li, Xiaolei Wang*

ACS Applied Nano Materials, **2020**, *3*(2), 1354-1362.

15. Hierarchical Chestnut-Burr Like Structure of Copper Cobalt Oxide Electrocatalyst Directly Grown on Ni Foam for Anion Exchange Membrane Water Electrolysis.

Yoo Sei Park, Myeong Je Jang, Jaehoon Jeong, Sung Min Park, Xiaolei Wang, Min Ho Seo, Sung Mook Choi*, Juchan Yang*

ACS Sustainable Chemistry & Engineering, **2020**, *8*(6), 2344-2349.

14. Room-Temperature Sputtered Electrocatalyst WSe₂ Nanomaterials for Hydrogen Evolution Reaction.

Jae Hyeon Nam, Myeong Je Jang, Hye Yeon Jang, Woojin Park, Xiaolei Wang, Sung Mook Choi*, Byungjin Cho, Y. Kim*, J. Yang*

Journal of Energy Chemistry, **2020**, *47*, 107-111.

Year 2019

13. Abundant Defects-induced Interfaces Enabling Effective Anchoring for Polysulfides and Enhanced Kinetics in Lean Electrolyte Lithium-Sulfur Batteries.

- Jizong Zhang, Jie Zhang, Kunlin Liu, Ting Tang, Jianhua Tian, Chengyang Wang, Mingming Chen*, Xiaolei Wang*
ACS Applied Materials and Interfaces, **2019**, *11*(50), 46767-46775.
12. Catalytic Synthesis of Hard/Soft Carbon Hybrids with Heteroatom Doping for Enhanced Sodium Storage.
Xu Liu, Youyu Zhu, Na Liu, Mingming Chen*, Chengyang Wang, Xiaolei Wang*
ChemistrySelect, **2019**, *4*(12), 3551-3558.
11. Microwave-assisted pyrolysis of sewage sludge: A review.
Ali Zaker, Zhi Chen*, Xiaolei Wang, Qiang Zhang
Fuel processing technology, **2019**, *187*, 84-104.
10. 3D N-doped Hybrid Architectures Assembled from 0D T-Nb₂O₅ Embedded in Carbon Microtubes toward High-Rate Li-ion Capacitors.
Sahar Hemmati, Ge Li, Xiaolei Wang, Yuanli Ding, Yu Pei, Aiping Yu, Zhongwei Chen*
Nano Energy, **2019**, *56*, 118-126.

Year 2018

9. A Lithium-Sulfur Battery Using A 2D Current Collector Architecture with A Large-Sized Sulfur Host Operated under High Areal Loading and Low E/S Ratio.
Matthew Li, Yining Zhang, Zhengyu Bai, Wenwen Liu, Tongchao Liu, Jihyeon Gim, Gaopeng Jiang, Yifei Yuan, Dan Luo, Kun Feng, Reza S. Yassar, Xiaolei Wang, Zhongwei Chen*, Jun Lu*
Advanced Materials, **2018**, *30*(46), 1804271.
8. Bifunctionally Active and Durable Hierarchically Porous Transition Metal-Based Hybrid Electrocatalyst for Rechargeable Metal-Air Batteries.
Min Ho Seo, Moon Gyu Park, Dong Un Lee, Xiaolei Wang, Wook Ahn, Seung Hyo Noh, Sung Mook Choi, Zachary P. Cano, Byungchan Han, Zhongwei Chen*
Applied Catalysis B: Environmental, **2018**, *239*, 677-687.
7. Two-Dimensional Phosphorus Doped Carbon Nansheets with Tunable Porosity for Oxygen Reactions in Zinc-Air Battery.
Wen Lei, Ya-Ping Deng, Gaoran Li, Zachary Cano, Xiaolei Wang, Dan Luo, Yangshuai Liu, Deli Wang, Zhongwei Chen*
ACS Catalysis, **2018**, *8*(3), 2464-2472.
6. Chemisorption of Lithium Polysulfides through Redox Reactions with Organic Molecules for Lithium-Sulfur Batteries.
Ge Li[§], Xiaolei Wang[§], Min Ho Seo, Matthew Li, Lu Ma, Yifei Yuan, Tianpin Wu, Aiping Yu, Shun Wang*, Jun Lu*, Zhongwei Chen*
Nature Communication, **2018**, *9*, 705. (co-first author)

Year 2017

5. Tuning Shell Numbers of Transition Metal Oxide Hollow Microspheres towards Durable and Superior Lithium Storage.
Dan Luo, Yaping Deng, Xiaolei Wang, Gaoran Li, Juan Wu, Jing Fu, Wen Lei, Ruiling Liang, Yangshuai Liu, Yuanli Ding, Aiping Yu, Zhongwei Chen*
ACS Nano, **2017**, *11*(11), 11521-11530.
4. Engineered Architecture of Nitrogenous Graphene Encapsulating Porous Carbon with Nano-Channel Reactors Enhancing the PEM Fuel Cell Performance.
Xiaogang Fu, Fathy Hassan, Pouyan Zamani, Gaopeng Jiang, Drew C Higgins, Ja-Yeon Choi, Xiaolei Wang, Pan Xu, Yanru Liu, Zhongwei Chen*
Nano Energy, **2017**, *42*, 249-256.
3. Compact High Volumetric and Areal Capacity Lithium Sulfur Batteries through Rock Salt Induced Nano-Architected Sulfur Hosts.

Matthew Li, Yining Zhang, Fathy Hassan, Wook Ahn, Xiaolei Wang, Wenwen Liu, Gaopeng Jiang, Zhongwei Chen*

Journal of Materials Chemistry A, **2017**, 5(40), 21435-21441.

2. Enhanced Reversible Sodium-Ion Intercalation by Synergistic Coupling of Few-Layered MoS₂ and S-doped Graphene.

Ge Li, Dan Luo, Xiaolei Wang*, Min Ho Seo, Aiping Yu, Zhongwei Chen*

Advanced Functional Materials, **2017**, 27(40), 1702562.

1. Design of Ultralong Single-Crystal Nanowire-Based Bifunctional Electrode for Efficient Oxygen and Hydrogen Evolution in A Mild Alkaline Electrolyte.

Ge Li, Xiaolei Wang*, Min Ho Seo, Sahar Hemmati, Aiping Yu, Zhongwei Chen*

Journal of Materials Chemistry A, **2017**, 5(22), 10895-10901.

Prior to UofA and Concordia

33. Xiaolei Wang, Ge Li, Min Ho Seo, Gregory Lui, Fathy Hassan, Kun Feng, Xingcheng Xiao*, Zhongwei Chen*, Carbon-Coated Silicon Nanowires on Carbon Fabric as Self-Supported Electrodes for Flexible Lithium-Ion Batteries.

ACS Applied Materials and Interfaces, **2017**, 9(11), 9551-9558.

32. Matthew Li, Yining Zhang, Xiaolei Wang, Wook Ahn, Gaopeng Jiang, Gregory Lui, Zhongwei Chen*, Gas Pickering Emulsion Templated Hollow Carbon for High Rate Performance Lithium Sulfur Batteries.

Advanced Functional Materials, **2016**, 26(46), 8408-8417.

31. Xiaolei Wang, Ge Li, Jingde Li, Yining Zhang, Wook Ahn, Aiping Yu, Zhongwei Chen*, Structural and Chemical Synergistic Encapsulation of Polysulfides Enables Ultralong-Life Lithium-Sulfur Batteries.

Energy and Environmental Science, **2016**, 9, 2533-2538. (*Highlighted in inside back cover*)

30. Xiaolei Wang§, Ge Li§, Yining Zhang, Zhongwei Chen*, Pomegranate-Inspired Rational Design of Highly Active and Durable Bifunctional Electrocatalysts for Rechargeable Metal-Air Batteries.

Angewandte Chemie International Edition, **2016**, 55(16), 4977-4982. (*VIP paper*) (*co-first author*)

29. Xiaolei Wang§, Xingye Fan§, Ge Li, Aiping Yu, Zhongwei Chen*, High-Performance Flexible Electrodes Based on Electrodeposited Polypyrrole/MnO₂ on Carbon Cloth for Low-Cost Supercapacitors.

Journal of Power Sources, **2016**, 326, 357-364. (*co-first author*)

28. Gregory Lui, Ge Li, Xiaolei Wang, Aiping Yu, Zhongwei Chen*, Flexible, 3D Ordered Macroporous TiO₂ Electrode with Enhanced Electrode-Electrolyte Interaction in High-Power Li-Ion Batteries.

Nano Energy, **2016**, 24, 72-77.

27. Xiaolei Wang, Ge Li, Min Ho Seo, Fathy M. Hassan, Md Ariful Hoque, Zhongwei Chen*, Sulfur Atoms Bridging Few-layered MoS₂ with S-doped Graphene Enables Highly Robust Anode for Lithium-ion Batteries.

Advanced Energy Materials, **2015**, 5(23), 1501106.

26. Xiaolei Wang, Ge Li, Fathy M. Hassan, Jingde Li, Xingye Fan, Rasim Batmaz, Xingcheng Xiao, Zhongwei Chen*, Sulfur Covalently Bonded Graphene with Large Capacity and High Rate for High-Performance Sodium-ion Batteries Anodes.

Nano Energy, **2015**, 15, 746-754.

25. Xiaolei Wang, Xingye Fan, Ge Li, Matthew Li, Xingcheng Xiao, Aiping Yu*, Zhongwei Chen*, Composites of MnO₂ Nanocrystals/Partially Graphitized Hierarchically Porous Carbon Spheres with Enhanced Rate Capability for High-performance Supercapacitors.

Carbon, **2015**, 93, 258-265.

24. Xiaolei Wang, Ge Li, Fathy M Hassan, Matthew Li, Kun Feng, Xingcheng Xiao*, Zhongwei Chen*, Building Sponge-like Robust Architecture of CNT-Graphene-Si Composites with Enhanced Rate and Cycling Performance for Lithium-Ion Batteries.

Journal of Materials Chemistry A, **2015**, *3*, 3962-3967.

23. Xiaolei Wang, Ge Li, Fathy M.Hassan, Rasim Batmaz, Xingcheng Xiao, Aiping Yu*, Fast Lithium-ion Storage of Nb₂O₅ Nanocrystals *in-situ* Grown on Carbon Nanotube for High-performance Asymmetric Supercapacitors.

RSC Advances, **2015**, *5*, 41179-41185.

22. Ge Li, Xiaolei Wang, Fathy M. Hassan, Matthew Li, Rasim Batmaz, Xingcheng Xiao, Aiping Yu*, Vanadium Pentoxide Nanorods Anchored to and Wrapped with Graphene Nanosheets for High-Performance Asymmetric Supercapacitors.

ChemElectroChem, **2015**, *2*(9), 1264-1269.

21. Fathy M. Hassan, Rasim Batmaz, Jingde Li, Xiaolei Wang, Aiping Yu, Xingcheng Xiao*, Zhongwei Chen*, Covalent Synergy of Silicon-Sulfur-Graphene as Peculiar Material Design for Cutting-edge Lithium-ion Battery.

Nature Communications, **2015**, *6*, 8597.

20. Wook Ahn, Min Ho Seo, Yun-Seok Jun, Dong Un Lee, Xiaolei Wang, Aiping Yu, Zhongwei Chen*, Sulfur Nanogranular Film-Coated Three-Dimensional Graphene Sponge-Based High Power Lithium Sulfur Battery.

ACS Applied Materials & Interfaces, **2016**, *8*(3), 1984-1991.

19. Dong Un Lee, Moon Gyu Park, Hey Woong Park, Min Ho Seo, Xiaolei Wang, Zhongwei Chen, Highly Active and Durable Nanocrystals-Decorated Bifunctional Electrocatalyst for Rechargeable Zinc-Air Batteries.

ChemSusChem, **2015**, *8*(18), 3129-3138.

18. Kun Feng, Wook Ahn, Gregory Lui, Hey Woong, Ali Ghorbani Kashkooli, Gaopeng Jiang, Xiaolei Wang, Zhongwei Chen*, Implementing an *in-situ* carbon network in Si/reduced graphene oxide for high performance lithium-ion battery anodes.

Nano Energy, **2016**, *19*, 187-197.

17. Chao Lei, Zheng Chen, Hiesang Sohn, Xiaolei Wang, Ding Weng, Meiqing Shen*, Yunfeng Lu*, Better Lithium-Ion Storage Materials Made through Hierarchical Assemblies of Active Nanorods and Nanocrystals.

Journal of Materials Chemistry A, **2014**, *2*, 17536-17544.

16. Kun Feng, Hey Woong Park, Xiaolei Wang, Dong Un Lee, Zhongwei Chen*, High Performance Porous Anode Based on Template-Free Synthesis of Co₃O₄ Nanowires for Lithium-Ion Batteries.

Electrochimica Acta, **2014**, *109*, 145-151.

15. Ge Li, Xiaolei Wang*, Xueming Ma, Nb₂O₅-Carbon Core-Shell Nanocomposite as Anode Material for Lithium Ion Battery.

Journal of Energy Chemistry, **2013**, *22*(3), 357-362. (*corresponding author*)

14. Ge Li, Xiaolei Wang*, Xueming Ma*, Tetragonal VNb₉O_{24.9}-based Nanorods: A Novel Form of Lithium Battery Anode with Superior Cyclability.

Journal of Materials Chemistry A, **2013**, *1*, 12409-12412. (*corresponding author*)

13. Ge Li, Xiaolei Wang, Zheng Chen, Xueming Ma*, Yunfeng Lu*, Characterization of Niobium and Vanadium Oxide Nanocomposites with Improved Rate Performance and Cycling Stability.

Electrochimica Acta, **2013**, *102*, 351-357.

12. Zheng Chen, Yin Yuan, Huihui Zhou, Xiaolei Wang, Zhihua Gan, Fosong Wang*, Yunfeng Lu*, 3D Nanocomposite Architectures from Carbon-Nanotube-Threaded Nanocrystals for High-Performance Electrochemical Energy Storage.

Advanced Materials, **2014**, 36(2), 339-345.

11. Xilai Jia, Zheng Chen, Xia Cui, Yiting Peng, Xiaolei Wang, Fei Wei*, Yunfeng Lu*, Building Robust Architectures of Carbon and Metal Oxide Nanocrystals towards High-Performance Anodes for Lithium Ion Batteries.

ACS Nano, **2012**, 6(11), 9911-9919.

10. Zheng Chen, Dieqing Zhang, Xiaolei Wang, Xilai Jia, Fei Wei, Hexing Li, Yunfeng Lu*, High-Performance Energy Storage Architectures from Carbon Nanotubes and Nanocrystal Building Blocks.

Advanced Materials, **2012**, 24(15), 2030-2036.

9. Zheng Chen, Ding Weng, Xiaolei Wang, Yanhua Cheng, Ge Wang, Yunfeng Lu*, Ready Fabrication of Thin-film Electrodes from Building Nanocrystals for Micro-Supercapacitors.

Chemical Communications, **2012**, 48, 3736-3738.

8. Xilai Jia, Zheng Chen, Arnold Suwarnasarn, Xiaolei Wang, Hiesang Sohn, Qiang Zhang, Fei Wei, Yunfeng Lu*, High-performance flexible lithium-ion electrodes based on robust network architecture.

Energy and Environmental Science, **2012**, 5, 6845-6849.

7. Xiaolei Wang, Ge Li, Zheng Chen, Veronica Augustyn, Xueming, Ma, Ge Wang, Bruce Dunn, Yunfeng Lu*, High-Performance Supercapacitors Based on CNT/Nb₂O₅ Nanocomposites.

Advanced Energy Materials, **2011**, 1(6), 1089-1093.

6. Xiaolei Wang, Daocheng Pan, Ding Weng, Chen-Yian Low, Lynn Rice, Jinyu Han, Yunfeng Lu*, A General Synthesis of Cu-In-S Based Multicomponent Solid-Solution Nanocrystals with Tunable Band Gap, Size, and Structure.

The Journal of Physical Chemistry C, **2010**, 114(41), 17293-17297.

5. Zheng Chen, Yaochun Qin, Ding Weng, Qiangfeng Xiao, Xiaolei Wang, Hexing Li, Fei Wei, Yunfeng Lu*, Design and Synthesis of Hierarchical Nanowire Composites for Electrochemical Energy Storage.

Advanced Functional Materials, **2009**, 19(21), 3420-3426.

4. Daocheng Pan, Xiaolei Wang, Z. Hong Zhou, Wei Chen, Chuanlai Xu and Yunfeng Lu*, Synthesis of Quaternary Semiconductor Nanocrystals with Tunable Band Gaps.

Chemistry of Materials, **2009**, 21(12), 2489-2493.

3. Daocheng Pan, Ding Weng, Xiaolei Wang, Qiangfeng Xiao, Wei Chen, Chuanlai Xu, Zhengzhong Yang, Yunfeng Lu*, Alloyed semiconductor nanocrystals with broad tunable bandgaps.

Chemical Communications, **2009**, 0, 4221-4223.

2. Xiaolei Wang, Jinyu Han, Hua Wang*, Preparation of Lactide Using Ionic Liquid Catalyst.

Journal of Chemical Industry and Engineering, **2007**, 58(12), 4-8.

1. Wei Mao, Xiaolei Wang, Hua Wang, Heying Chang, Xiangwen Zhang, Jinyu Han*, Thermodynamic and Kinetic Study of *tert*-amyl methyl ether (TAME) synthesis.

Chemical Engineering and Processing: Process Intensification, **2007**, 47(5), 761-769.