

JONGWOO LIM

Mailing address

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APPOINTMENTS

Seoul National University, Seoul, Korea

Associate Professor, Department of Chemistry

Mar.2022 – Present

Assistant Professor, Department of Chemistry

Mar.2017 – April.2022

Stanford University, California, United States

Postdoctoral Researcher, Department of Materials Science and Engineering

Oct.2014 – Feb.2017

Advisor : William C. Chueh

University of California at Berkeley, California, United States

Postdoctoral Researcher, Department of Chemistry

Feb.2014 - Sep.2014

Advisor : Peidong Yang

EDUCATION

University of California at Berkeley, California, United States

Ph. D. Department of Chemistry

Aug.2008 - Dec.2013

Advisor : Peidong Yang

Thesis Title : Phonon and Electron Transport in Silicon Nanostructures

- Graduate Student Silver Award, **Materials Research Society (MRS)**, Apr. 2013

Pohang University of Science and Technology (POSTECH), Pohang, Korea

B.S. Department of Chemistry

Mar.2001 - Feb.2008

Advisor: Sungjee Kim

University of California at Berkeley, California, United States

Concurrent enrollment program *Advisor : Stephen Leone*

Aug.2006 - May.2007

The University of Tokyo, Tokyo, Japan

Visiting Researcher *Advisor: T. Hasegawa and T. Shimada*

Jan.2006 - Feb.2006

RESEARCH SUPERVISION

Graduate Student Advisees

Name	Before SNU	At SNU	After SNU
36.Jiwon Lee	B.S. SKKU 2024.02	MS SNU 2024. 02 - present	
35.Jongbeom Lim	B.S. Sejong U 2024.02	MS/Ph.D SNU 2024. 02 - present	
34.Hyunji Yoo	B.S. SNU 2024.02	MS/Ph.D SNU 2024. 02 - present	
33.Eunki Hong	B.S. SKKU 2024.02	MS/Ph.D SNU 2024. 02 - present	
32.Jaewon Lee	B.S. Yonsei 2023.02	MS/Ph.D SNU 2024. 02 - present	
31.Jiseok Kim	B.S. Yonsei 2023.08	MS/Ph.D SNU 2024. 02 - present	
30.Unbyol Ko	LG Chem	Ph.D SNU 2023. 09 - present	
29. Songha Seo	B.S Sookmyung U. 2023.08	MS/PhD. SNU 2023. 09 – present	
28. Soosung Hwang	B.S. Korea U. 2023.08	MS/PhD. SNU 2023. 09 – present	
27. Seyeon Shin	B.S. GIST 2023.02	MS/PhD. SNU 2023. 09 – present	
26. Gibeom Kim	B.S Pusan Natl. U. 2023.02	MS/PhD. SNU 2023. 02 – present	
25. San Hwang	Samsung SDI	MS SNU 2023.02 - present	
24. Yuntaek Oh	Samsung SDI	MS SNU 2023.02 - present	
23. Yujeong Hwang	B.S Kyunghee U. 2023.02	MS/PhD. SNU 2022. 02 – present	
22. Hanbi Choi	B.S. Ewha W. U. 2022.07	MS SNU 2022.09 - present	
21. Sumin Oh	B.S. Hanyang U. 2022.02	MS/Ph.D. SNU 2022.03 – present	
20. Yumin Heo	B.S. SNU 2021.08	MS/Ph.D. SNU 2021.09 – present	
19. Chihyun Nam	B.S. SNU 2021.08	MS/Ph.D. SNU 2021.09 – present	
18. Ikcheon Na	B.S. Korea U. 2021. 02	M.S. SNU 2021.03 – 2023.02	Ph.D SNU 2023.02
17. Munsoo Song	B.S. UT Austin 2021.02	MS/Ph.D. SNU 2021.03 – present	
16. Jeongho Cho	B.S. Choongang U. 2021.02	MS/Ph.D. SNU 2021.03 – present	
15. Karl Gandionco	M.S. U. of P. Diliman 2018. 05	Ph.D. SNU 2020.09 – present	
14. Junyeob Moon	B.S. SNU. 2020.02	M.S. SNU 2020.03 – 2022.02	Ph.D. Harvard U
13. Sungjae Seo	B.S. HUFS 2019.02	MS/Ph.D. SNU 2019.09 – present	
12. Danwon Lee	B.S. Sogang U. 2019.02	MS/Ph.D. SNU 2019.03 – present	
11. Yongjoon Kim	B.S. Yonsei U 2019.02	M.S. SNU 2019.03 – 2021.02	Samsung Electronics
10. Donghyuk Go	B.S. Yonsei U 2019.02	M.S. SNU 2019.03 – 2021.02	Samsung SDI
9. Hwiho Kim	B.S. Yonsei U. 2019.02	MS/Ph.D. SNU 2019.03 – present	
8. Jeongwoo Han	B.S. KwangWoon U 2018. 09	M.S. SNU 2019.03 – 2021.08	LG Energy Solution
7. Junho Bae	B.S. CNU 2018.08	MS/Ph.D. SNU 2018.09 – present	
6. Juwon Kim	B.S. Sungsil U. 2018.08	MS/Ph.D. SNU 2018.09 – present	
5. Subin Choi	M.S Kyunghee U. 2018.08	Ph.D. SNU 2018.09 – present	
4. Hyejeong Hyun	B.S. Yonsei U. 2018.02	MS/Ph.D. SNU 2018.03 – 2023.08	Samsung Electronics

3. Bonho Koo	B.S. Postech 2018. 02	MS/Ph.D. SNU 2018.03 –2024.01	Post-doc SNU
2. Suguen Jo	B.S. Sogang U. 2017.07	MS/Ph.D. SNU 2017.09 - 2023.08	Post-doc PAL
1. Jinkyu Chung	B.S. Gacheon U. 2017.07	MS/Ph.D. SNU. 2017.09 - present	

Postdoctoral Associate Advisees

4. Jaejung Song	Postdoc. UNIST 2022	Postdoc. SNU 2022.01 - present	
3. Sebastian Kunze	Ph.D. Fritz Haber Inst. 2021. 07	Postdoc. SNU 2022.06 - present	
2. Chiwon Kang	Research Prof. SKKU 2020.01	Postdoc. SNU 2020.02 – 2022.07	Postdoc. Soongsil U
1. Jian Wang	Ph.D. HKUST 2018.08	Postdoc. SNU 2018.09 – 2021.08	Assis. Prof. City University of Hong Kong

TEACHING EXPERIENCE

AT SEOUL NATIONAL UNIVERSITY

Analytical Chemistry I: Spring 2021, Spring 2023
 Electrochemistry: Spring 2022
 Advanced Materials Chemistry: Fall 2022
 Chemical Instrumentation: Fall 2018, Fall 2019, Fall 2020
 General Chemistry I: Fall 2017, Spring 2020
 General Chemistry II: Spring 2018
 General Chemistry: Spring 2019, Fall 2021
 General Chemistry Honor: Spring 2022, Spring 2023
 Department Research Seminar: Spring 2018
 Graduate Student Colloquium: Spring 2019

PROFESSIONAL SERVICE

Board of Trustees, Korean Electrochemical Society	2018 – present
Secretary of electrochemical chemistry division, Korean Chemical Society	2019-2021
Secretary of analytical chemistry division, Korean Chemical Society	2018-2019
Secretary of physical chemistry division, Korean Chemical Society	2020

AWARDS

<u>Y-KAST member</u> , Korean Academy of Science and Technology	Dec. 2023
<u>Young Scientist Award</u> , President of Korea	Nov.2023

<u>KCS-Wiley Young Chemist Award</u> , Korean Chemical Society	Oct. 2023
<u>Research Award</u> , SNU College of Science	Mar. 2023
<u>Outstanding Poster Award</u> , International Union of Materials Research Society (IUMRS)	Oct. 2015
<u>Graduate Student Award Silver</u> , Materials Research Society (MRS)	Apr. 2013

PATENT and PATENT APPLICATIONS

- [1] **J. Lim**, H. Hyun, S. W. Kim, “Anode material of lithium ion battery and method of preparing the same” 2020, 10-2180203, Korea
- [2] J. Nam, S. Hong, K. Kim, K. Nam, **J. Lim**, W. Shi, H. Yoon, S. Lee, M. Seong, J. Lee, J. Lee, Y. Hong, “4D Molecular-Nano-Addressable Lithographic Self-Assembly (4D MONALISA), 10-2022-0024906, Korea
- [3] **J. Lim**, J. Moon, “Electrolyte and secondary battery comprising the same” 2022, 10-2002-0114069, Korea
- [4] **J. Lim**, J. Moon, “Electrolyte and secondary battery comprising the same” 2023, 2023-529120, Japan
- [5] **J. Lim**, J. Moon, “Electrolyte and secondary battery comprising the same” 2023, 18/289,932, US
- [6] **J. Lim**, J. Moon, “Electrolyte and secondary battery comprising the same” 2023, PCT/KR2022/017205
- [7] **J. Lim**, I. Na, “Silicon anode for solid-state battery and solid-state battery comprising the same”, 18/289,422 US
- [8] **J. Lim**, I. Na, “Silicon anode for solid-state battery and solid-state battery comprising the same”, 10-2022-0168751, Korea
- [9] **J. Lim**, I. Na, “Silicon anode for solid-state battery and solid-state battery comprising the same”, PCT/KR2022/017205

PUBLICATIONS

- [-] Juwon Kim[†], Si Young Lee[†], Se-Jun Kim[†], Bonho Koo, Jinkyu Chung, Danwon Lee, Subin Choi, Sungjae Seo, Karl Adrian Gandioco, Namdong Kim, Hyun-Joon Shin, Keun Hwa Chae, Da Hye Won, Matthew A. Marcus, David A. Shapiro, Shu-Chih Haw, Daan Hein Alsem, Norman J. Salmon, Byoung Koun Min, Hyungjun Kim^{*}, Yun Jeong Hwang^{*}, and **Jongwoo Lim^{*}** “Spatiotemporal active phase evolution for CO₂ electrocatalysis”, *under review*
- [-] Danwon Lee[†], Chihyun Nam[†], Juwon Kim, Bonho Koo, Hyejeong Hyun, Jinkyu Chung, Sungjae Seo, Munsoo Song, Jaejung Song, Daan Hein Alsem, Norman J. Salmon, Suyong Lee, Namdong Kim, David A. Shapiro, and **Jongwoo Lim^{*}** “Non-Fickian multi-clustered lithium diffusion in single-crystalline NMC battery particles”, *under review*
- [-] Sugeun Jo[†], Sungjae Seo[†], Ikcheon Na, Sebastian Kunze, Munsoo Song, SungPil Woo, Song Kyu Kang, Won Bae Kim, SoHee Kim, and **Jongwoo Lim^{*}** “Thermal runaway mechanism of Ni-rich cathode full-cell”, *under review*

[61] H. Zhao, H. D. Deng, A. E Cohen, **J. Lim**, Y. Li, D. Fraggedakis, B. Jiang, B. D Storey, W. C Chueh, R. D Braatz, M. Z Bazant* “Learning heterogeneous reaction kinetics from X-ray videos pixel by pixel” *Nature*, **2023**, 621, 289-294

[60] H. Hyun[†], H. Yoon[†], S. Choi, J. Kim, S. Y. Kim, T. Regier, Z. Arthur, S. K. Kim, **J. Lim*** “Paradoxical role of structural degradation of nickel-rich layered oxides in capacity retention upon storage of lithium-ion batteries” *Energy and Environmental Science*, **2023**, 16, 3968-3983

Press release : Dong-A Science, Beta News, etc.

[59] H. Hyun, I. Na, D. Ham, S. Y. Lee, **J. Lim*** “Annealing-Induced Dynamic Strain Evolution in Cycled High-Ni Layered Oxides Revealing Latent Lattice Imperfections” *Advanced Energy Materials*, **2023**, **13**, 2301647

- *Selected as inside cover*

[58] B. Koo[†], J. Chung[†], J. Kim[†], D. Fraggedakis, S. Seo, C. Nam, D. Lee, J. Han, S. Jo, H. Zhao, N. Nadkarni, J. Wang, N. Kim, M. Weigand, M. Z. Bazant*, **J. Lim*** “Dynamic surface phases controlling asymmetry of high-rate lithiation and delithiation in phase-separating electrodes” *Energy and Environmental Science*, **2023**, 16, 3302-3313

- *Selected as front cover*
- *Press release : Veritas alpha, Beta News, etc by media*

[57] J. Wang^{*†}, H. Hyun[†], S. Seo[†], K. Jeong, J. Han, S. Jo, H. Kim, B. Koo, D. Eum, J. Kim, J. Chung, H.-H. Cho, H. N. Han, T. J. Shin, M. Ni, K. Kang*, **J. Lim***, “A Kinetic Indicator of Ultrafast Nickel-rich Layered Oxide Cathodes” *ACS Energy Letters*, **2023**, 8, 7, 2986-2995

- *Selected as front cover*

[56] J. Kim, D. Lee, C. Nam, J. Chung, B. Koo, N. Kim*, **J. Lim*** “Energy material analysis via in-situ/operando scanning transmission x-ray microscopy: A review” *Journal of Electron Spectroscopy and Related Phenomena*, **2023**, 266, 147337 (invited review)

[55] H. Hyun, **J. Lim*** “Elucidating degradation mechanisms of Co-free high-Ni layered oxide cathodes for Li-ion batteries via advanced X-ray-based characterization methods” *Ceramist*, **2023**, 26, 138-157

[54] K. A. Gandionco, J. Kim, L. Bekaert, A. Hubin, **J. Lim*** “Single-Atom Catalysts for the Electrochemical Reduction of Carbon Dioxide into Hydrocarbons and Oxygenates” *Carbon Energy*, **2023**, e410

[53] M. Jang[#], S. Choi[#], Y. Kim, J. Cha, A.-R. Kim, H. Jeong, Y. Kim, S. H. Choi, S. W. Nam, **J. Lim**^{*}, C. W. Y.^{*}, H. Sohn^{*} “Effect of CeO₂ redox properties on the catalytic activity of Pt-CeO_x over irreducible SiO₂ support for methylcyclohexane (MCH) dehydrogenation” *Applied Surface Science*, **2023**, 627, 157134

[52] I. Na, H. Kim, S. Kunze, C. Nam, S. Jo, H. Choi, S. Oh, E.e Choi, Y. B. Song, Y. S. Jung, Y. S. Lee, **J. Lim**^{*} “Monolithic 100% silicon anode for all-solid-state batteries achieving high areal capacity at room temperature” *ACS Energy Letters*, **2023**, 8, 4, 1937-1943

- Press release : *Hankyung.com, Veritas alpha, DongA Science, etc.*

[51] J. Bae, S. Oh, B. Lee, C. Lee, J. Chung, J. Kim, S. Jo, **J. Lim**^{*}, S. Chung^{*} “High-performance, printable quasi-solid-state electrolytes toward all 3D direct ink writing of shape-versatile Li-ion batteries” *Energy Storage Materials*, **2023**, 57, 277-288

- Selected as cover
- Press release : *Yonhap News, Financial News, ChosunBiz, Heraldbusiness, etc.*

[50] J. S. Kim, S. Jung, H. Kwak, Y. Han, S. Kim, **J. Lim**, Y. M. Lee^{*}, Y. S. Jung^{*} “Synergistic halide-sulfide hybrid solid electrolytes for Ni-rich cathodes design guided by digital twin for all-solid-State Li batteries” *Energy Storage Materials*, **2023**, 55, 193-204

[49] D. Eum, H. Jang, B. Kim, J. Chung, D. Kim, S. Cho, S. Song, S. Kang, S. Yu, S. Park, J. Song, H. Kim, O. Tamwattana, D. Kim, **J. Lim**, K. Kang^{*} “Effects of cation superstructure ordering on oxygen redox stability in O₂-type lithium-rich layered oxides” *Energy & Environmental Science*, **2023**, 16, 673

[48] M. Song, D. Lee, J. Kim, Y. Heo, C. Nam, D. Ko, **J. Lim**^{*}, “Chemical decomposition pathway of residual lithium carbonate of Li-ion battery cathodes” *Journal of Power Sources*, **2023**, 560, 232699

[47] S. Jo, J. Han, S. Seo, O. Kwon, S. Choi, J. Zhang, H. Hyun, J. Oh, J. Kim, J. Chung, H. Kim, J. Wang, J. Bae, J. Moon, Y. Park, M. Hong, M. Kim, Y. Liu, I. Sohn, K. Jung^{*}, **J. Lim**^{*} “Solid-State Reaction Heterogeneity During Calcination of Lithium-Ion Battery Cathode” *Advanced Materials*, **2023**, 2207076

- Press release : *Veritas alpha, Unipress, etc.*
- Selected as Front Cover Art

[46] Z. Wang, Y. Wang, J. Wang, Y. Song, M. J. Robson, A. Seong, M. Yang, Z. Zhang, A. Belotti, J. Liu, G. Kim, **J. Lim**, Z. Shao, F. Ciucci^{*} “Rational design of perovskite ferrites as high-performance proton-conducting fuel cell cathode” *Nature Catalysis* **2022**, 5, 777

[45] K. Yoon[#], H. Kim[#], S. Han, T.-S. Chan, K.-H. Ko, S. Jo, J. Park, S. Kim, S. Lee, J. Noh, W. Kim, **J. Lim**^{*}, and K. Kang^{*} “Detrimental effect of high-temperature storage on sulfide-based all-solid-state batteries” *Applied Physics Reviews*, **2022**, 9, 031403

[44] J. Moon[#], D. O. Kim[#], L. Bekaert, M. Song, J. Chung, D. Lee, A. Hubin^{*}, **J. Lim**^{*} “Non-uorinated non-solvating cosolvent enabling superior performance of lithium metal anode battery” *Nature Communications*, **2022**,13,4538

- Press release : YTN, YTN Science, Yonhap news, etc.

[43] Y. Kim, T. Kodama, Y. Kim, B. S. Y. Kim, C. Ko, **J. Lim**^{*}, W. Park^{*} "Suppressed phonon conduction by geometrically induced evolution of transport characteristics from Brownian motion into Lévy flight" *NPG Asia Materials*, **2022**, 14, 33

[42] J. Song, S. Choi, **J. Lim**^{*}, K. T. Kim^{*} "Templated synthesis of microparticles with carbonaceous skeletal structures using polymer cubosomes as templates" *RSC Advances*, **2022**, 12, 14, 8429-8434

[41] R. Gao, J. Xu, J. Wang, **J. Lim**, C. Peng, L. Pan[#], X. Zhang, H Yang, and J. -J. Zou^{*} “Pd/Fe₂O₃ with Electronic Coupling Single-Site Pd–Fe Pair Sites for Low-Temperature Semihydrogenation of Alkynes” *Journal of American Chemical Society*, **2022**, 144, 1, 573-581

[40] J. Han, S. Jo, I. Na, S. Oh, Y. Jeon, J. Park, B. Koo, H. Hyun, S. Seo, D. Lee, H. Kim, J. Kim, J. -C. Lim, **J. Lim**^{*} "Homogenizing silicon domains in SiO_x anode during cycling and enhancing battery performance via magnesium doping" *ACS Applied Materials and Interfaces*, **2021**, 13, 52202

[39] H. Hyun, K. Jeong, H. Hong, S. Seo, B. Koo, D. Lee, S. Choi, S. Jo, K. Jung, H. -H. Cho, H. N. Han ,T. J. Shin^{*}, **J. Lim**^{*} "Suppressing High-Current-Induced Phase Separation in Ni-Rich Layered Oxides by Electrochemically Manipulating Dynamic Lithium Distribution" *Advanced Materials*, **2021**, 2105337

[38] Z.-L. Xu, J. Park, J. Wang, H. Moon, G. Yoon, **J. Lim**, Y.-J. Ko, S. -P. Cho, S. -Y. Lee, K. Kang^{*} A new high-voltage calcium intercalation host for ultra-stable and high-power calcium rechargeable batteries *Nature communications* **2021**, 12, 3369

[37] Z. Zhang, J. Liu, J. Wang, Q. Wang, Y. Wang, K. Wang, Z. Wang, M. Gu, Z. Tang, **J. Lim**, T. Zhao, F. Ciucci^{*}, “Single-atom catalyst for high-performance methanol oxidation”, *Nature Communications*, **2021**, 12, 5235

[36] S. Ansah, H. Hyun, N. Shin, J.-S. Lee, **J. Lim**^{*}, H.-H. Cho^{*}, "A modeling approach to study the performance of Ni-rich layered oxide cathode for lithium-ion battery" *Computational Materials Science*, **2021**,

[35] J. Park, .T. H. Lee, C. Kim, S. A. Lee, M. -J. Choi, H. Kim, J. W. Yang, **J. Lim**^{*}, H. W. Jang^{*}, “Hydrothermally obtained type-II heterojunction nanostructures of In₂S₃/TiO₂ for remarkably enhanced photoelectrochemical water splitting” *Applied Catalysis B: Environmental*, **2021**, 295, 120276

[34] R. Gao[#], W. Wang[#], L. Pan[#], J. Wang[#], J. Zhang, W. Zhu, X. Zhang, C. Shi, **J. Lim**^{*}, J-J. Zou^{*}, “Pt-Fe single pair with opening orbitals driven by strong electronic coupling for electrocatalytic oxygen reduction” *Nature Energy*, **2021**, 6, 614-623

[33] J. Wang^{*}, S.-J. Kim, J. Liu, Y. Gao, S. Choi, J. Han, H. Shin, S. Jo, J. Kim, F. Ciucci, H. Kim, Q. Li, W. Yang, X. Long, S. Yang^{*}, S.-P. Cho, K. H. Chae, M. G. Kim, H. Kim^{*}, **J. Lim**^{*}, “Redirecting Dynamic Surface Restructuring of a Layered Transition Metal Oxide Catalyst for Superior Water Oxidation” *Nature Catalysis*, **2021**, 4, 212-222

- Highlighted as a **main cover** of *Nature Catalysis* March Issue (March 2021)
- Press release : *Maeil Business Newspaper*, etc.

[32] S. Hu, J. Wang, J. Zhang, **J. Lim**, Y. Gao, S. Zhang^{*}, “Engineering the electronic structure of perovskite oxide surface with ionic liquid for enhanced oxygen reduction reaction” *Applied Catalysis B: Environmental*, **2021**, 282, 11959

[31] J. Yu[†], J. Wang[†], X. Long, L. Chen, Q. Cao, J. Wang, C. Qiu, **J. Lim**, S. Yang^{*} “Formation of FeOOH Nanosheets Induces Substitutional Doping of CeO_{2-x} with High-Valence Ni for Efficient Water Oxidation” *Advanced Energy Materials*, **2021**, 11, 2002731

[30] A. Curcio, J. Wang, Z. Wang, Z. Zhang, A. Belotti, S. Pepe, M. B. Effat, Z. Shao, **J. Lim**, F. Ciucci “Unlocking the Potential of Mechanochemical Coupling: Boosting the Oxygen Evolution Reaction by Mating Proton Acceptors with Electron Donors” *Advanced Functional Materials*, **2021**, 31, 4, 2008077

[29] M. Lin[†], J. Wang[†], G. -H. Kim[†], J. Liu, L. Pan, Y. Lee, J. -W. Oh, Y. Jung, S. Seo, Y. Son, **J. Lim**, J. Park, T. Hyeon, and J. -M. Nam^{*} “One-Pot Heterointerfacial Metamorphosis for Synthesis and Control of Widely Varying Heterostructured Nanoparticles” *Journal of American Chemical Society*, **2021**, 143, 3383 – 3392

[28] S. Hu, J. Wang, J. Zhang, **J. Lim**, Y. Gao, S. Zhang^{*}, “Engineering the electronic structure of perovskite oxide surface with ionic liquid for enhanced oxygen reduction reaction” *Applied Catalysis B: Environmental*, **2021**, 282, 11959

[27] A. Curcio[†], J. Wang[†], Z. Wang, Z. Zhang, A. Belotti, S. Pepe, M. B. Effat, Z. Shao, **J. Lim**, F. Ciucci^{*} “Unlocking the Potential of Mechanochemical Coupling: Boosting the Oxygen Evolution Reaction by Mating Proton Acceptors with Electron Donors” *Advanced Functional Materials*, **2020**, 4, 31, 2008077

- [26] J. Wang^{*}, Y. Gao, H. Kong, J. Kim, S. Choi, F. Ciucci, Y. Hao, S. Yang, Z. Shao, **J. Lim^{*}** “Non-precious-metal catalysts for alkaline water electrolysis: operando characterizations, theoretical calculations, and recent advances” *Chemical Society Review*, **2020**, 49, 9154-9196
- [25] W. M. Seong, K. -H. Cho, J.-W. Park, H. Park, D. Eum, M. H. Lee, I. S. Kim, **J. Lim^{*}**, K. Kang^{*} “Controlling residual lithium in high-nickel (> 90%) lithium layered oxides for cathodes in lithium-ion batteries” *Angewandte Chemie International Edition*, **2020**, 59 (42), 18662-18669
- [24] J. Wang, H. Kim, H. Hyun, S. Jo, J. Han, D. Ko, S. Seo, J. Kim, H. Kong, **J. Lim^{*}** “Probing and Resolving the Heterogeneous Degradation of Nickel-Rich Layered Oxide Cathodes across Multi-Length Scales” *Small Methods*, **2020**, 4 (10) 2000551
- [23] J. Wang^{*}, J. Kim, S. Choi, H. Wang, **J. Lim^{*}** “A Review of Carbon-Supported Nonprecious Metals as Energy-Related Electrocatalysts” *Small Methods*, **2020**, 4 (10), 2000621
- [22] Y. Kim, H. Kwon, H.S. Han, H.J.K Kim, BSY Kim, B.C. Lee, J. Lee, M. Asheghi, F. B Prinz, K. E Goodson, **J. Lim^{*}**, U. Sim^{*}, W. Park^{*} “Tunable Dielectric and Thermal Properties of Oxide Dielectrics via Substrate Biasing in Plasma-Enhanced Atomic Layer Deposition” *ACS Applied Materials & Interfaces*, **2020**, 12 (40), 44912-44918
- [21] B. H. Kim[†], J. Heo[†], S. Kim[†], C. F Reboul, H. Chun, D. Kang, H. Bae, H. Hyun, **J. Lim**, H. Lee, B. Han, T. Hyeon, A P. Alivisato P. Ercius^{*}, H. Elmlund^{*}, J. Park^{*} “Critical differences in 3D atomic structure of individual ligand-protected nanocrystals in solution” *Science*, **2020**, 358 6486 60-67
- [20] J. Park[†], ZL Xu[†], G. Yoon, S. K. Park, J. Wang, H. Hyun, H. Park, **J. Lim**, Y-J. Ko, Y. S. Yun, K. Kang^{*}, “Stable and High-Power Calcium-Ion Batteries Enabled by Calcium Intercalation into Graphite” *Advanced Materials*, **2019**, 1904411
- [19] H. Park, J. Han, D. Dillen, J. Park, C. Kim, M. Sim, J. Nah, J. Lim, E. Tutuc, J. Seol, “Thermal conductivity measurement and analysis of Ge-Si x Ge1-x core-shell nanowires” *Applied Physics Express*, 2019, 12, 045001
- [18] Y. Li, H. Chen, K. Lim, H. D. Deng, **J. Lim**, D. Fraggidakis, P. M. Attia, S. C. Lee, N. Jin, J. Moskon, Z. Guan, J. Hong, Y. S. Yu, M. Gaberscek, M. S. Islam, M. Z. Bazant, W. C. Chueh^{*}, "Fluid-enhanced Surface Diffusion Controls Intra-particle Phase Transformations" *Nature Materials*, **2018**, 18, 915 – 922
- [17] K. K. Sakimoto, N. Kornienko, C. Cestellos-Blanco, **J. Lim**, C. Chong, P. Yang^{*}, “Physical Biology of the Materials–Microorganism Interface” *Journal of the American Chemical Society*, **2017**, 140 (6) 1978-

[16] J. H. Seol*, D. S. Barth, J. Zhu, D. Coso, K. Hippalgaonkar, **J. Lim**, J. Han, X. Zhang, and A. Majumdar* “Tunable thermal conductivity in mesoporous silicon by slight porosity change” *Applied Physics Letters*, **2017**, 111, 063104

[15] H. So, **J. Lim**, A. Suria, D. Senesky* “Highly antireflective AlGaIn/GaN ultraviolet photodetectors using ZnO nanorod arrays on inverted pyramidal surfaces” *Applied Surface Science*, **2017**, 409, 91-96

Before SNU

[14] **J. Lim**[#], Y. Li[#], D. H. Alsem, H. So, S. Lee, P. Bai, D.A. Cogswell, X. Liu, N. Jin, Y. Yu, N. Salmon, D. Shapiro, M. Z. Bazant, T. Tylliszczak, W. C. Chueh* “Origin and Hysteresis of Li Compositional Spatio-Dynamics within Battery Primary Particles”, *Science*, **2016**, 353, 566-571

- Covered by over 20 media reports including Stanford News, Chosun.com, JTBC.co.kr, etc.
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- [2] **J. Lim**[#], K. Hippalgaonkar[#], S. C. Andrews, A. Majumdar* and P. Yang*, “Quantifying Surface Roughness Effect On Phonon Transport in Silicon Nanowires”, *Nano Letters*, **2012**, 12(5), 2475-2482
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denotes equal contribution

* denotes corresponding authors

INVITED TALKS

1. (2024.03) Gordon Research Conference Batteries 2024, Ventura, USA (upcoming)
2. (2024. 02) SNU-Stanford University workshop, Stanford, USA (upcoming)
3. (2024.01) Shanghai-SNU Symposium on Electrocatalysis and Energy Materials (upcoming)
4. (2023.11) The 11th Pacific Rim International Conference on Advanced Materials and Processing (PRIMC11), Jeju, South Korea
5. (2023.11) Seoul Battery Forum, Seoul, South Korea
6. (2023.11) Research Institute of Industrial Science and Technology, Pohang, South Korea
7. (2023.11) Annual Forum – Energy Device & Electrochemistry, Samsung Science & Technology Foundation, Seoul, South Korea

8. (2023.11) The 11th Pacific Rim International Conference on Advanced Materials and Processing (PRICM11), Jeju, South Korea
9. (2023.11) User Meeting of Pohang Advanced Light Source, Pohang, South Korea
10. (2023.10) Incheon National University, Incheon, South Korea
11. (2023.10) RSC-SNU Joint Symposium, Seoul, South Korea
12. (2023.10) Young Investigator Symposium of Korean Chemical Society, Gwangju, South Korea
13. (2023.10) Inorganic Chemistry Division, Korean Chemical Society, Gwangju, South Korea
14. (2023.9) EcoPro, Sejong, South Korea
15. (2023. 9) 20th International Microscopy Congress, Busan, South Korea
16. (2023.9) Department of Chemical Engineering, POSTECH, Pohang, South Korea
17. (2023.9) SK Innovation, Daejeon, South Korea
18. (2023.9) Samsung Global Technology & IP Workshop, Seoul, South Korea
19. (2023.8) The 7th Artificial Photosynthesis Workshop, Busan, South Korea
20. (2023.7) The 1st LG Energy Solution Conference, Daejeon, South Korea
21. (2023.7) SAIT-SNU Joint Workshop, Suwon, South Korea
22. (2023.5) Korea Electrotechnology Research Institute, Changwon, South Korea
23. (2023.4) Battery Division, Korean Electrochemical Society, Jeju, South Korea
24. (2023.4) Physical Electrochemistry Division, Korean Electrochemical Society, Jeju, South Korea
25. (2023.2) Department of Chemistry, Nayang Technological University, Singapore
26. (2023.2) Department of Materials Science and Engineering, Nayang Technological University, Singapore
27. (2022.11) LG Energy Solution Tech Forum, Daejeon, South Korea
28. (2022.11) LG Energy Solution Tech Forum, Daejeon, South Korea
29. (2022.11) KOFST Brain Link, Incheon, South Korea
30. (2022.11) Industrial and Engineering Chemistry Society, Daejeon, South Korea
31. (2022.11) User Meeting of Pohang Advanced Light Source, Pohang, South Korea
32. (2022.10) 7th Ertl Symposium, Gwangju, South Korea
33. (2022.9) Samsung Global Technology Conference, Seoul, South Korea
34. (2022.8) User Meeting of Advanced Light Source, Berkeley, CA, USA (on-line)
35. (2022.7) International Conference on Solid State Ionics (SSI-23), Boston, MA, USA
36. (2022.6) Department of Chemical Engineering, UNIST, Ulsan, South Korea
37. (2022.4) Division of Materials Chemistry, Korean Chemical Society, Jeju, South Korea
38. (2022.4) Department of Mechanical Engineering, Seoul National University, Seoul, South Korea
39. (2022.4) Division of Fuel Cell, Korean Electrochemical Society, Jeju, South Korea
40. (2022.4) LG Energy Solution, Daejeon, South Korea
41. (2021.10) International Union of Materials Research Society (IUMRS-ICA), Jeju, South Korea
42. (2021.10) The Korean Institute of Chemical Engineers, Gwangju, South Korea
43. (2021.10) Korean Chemical Society, Busan, South Korea (on-line)

44. (2021.9) Department of Chemistry, Gyeongsang National University, Jinju, South Korea
45. (2021.8) LG Chem, Daejeon, South Korea
46. (2021.8) International Society of Electrochemistry (ISE), Jeju, South Korea
47. (2021.08) American Chemical Society, online
48. (2021.08) Daejoo Electronic Materials, Siheung, South Korea
49. (2021.07) Korea Institute of Energy Research, Daejeon, South Korea
50. (2021.06) Korea Institute of Science and Technology, Seoul, South Korea
51. (2021.05) Materials Research Society of Korea, Gwangju, South Korea
52. (2021.05) The Korean Hydrogen & New Energy Society, Daejeon, South Korea
53. (2021.4) LG Chem, Daejeon, South Korea
54. (2021.4) 8th International Congress on Ceramics (ICC8), Busan, South Korea
55. (2021.2) Division of Materials Chemistry, Korean Chemical Society, Winter Symposium, South Korea
56. (2020.11) User Meeting of Ultraviolet Synchrotron Orbital Radiation Facility (UVSOR), Okazaki, Japan (online)
57. (2020.11) The 6th ERTL Symposium, Gwangju, South Korea (online)
58. (2020.11) User Meeting of Pohang Advanced Light Source, Pohang, South Korea
59. (2020.07) The Korean Institute of Metals and Materials, South Korea (online)
60. (2020.01.16) Nano Convergence Conference 2020, Chuncheon, South Korea
61. (2020.12.12) Daegu- Gyeongbuk Institute of Science and Technology, Daegu, South Korea
62. (2019.11.29) Pohang Light Source User Meeting, Pohang, South Korea
63. (2019.11.28) The 2nd International Symposium on SAMI, Pohang, South Korea
64. (2019.11.07) Korean Electrochemical Society, South Korea
65. (2019.10.24) The Korean Institute of Metals and Materials, Daegu, South Korea
66. (2019.09.18) National Synchrotron Radiation Research Center User Meeting, Taiwan
67. (2019.08.29) Artificial Photosynthesis Workshop, Busan, South Korea
68. (2019.08.19) MCARE 2019, Daejeon, South Korea
69. (2019.08.22) Battery Technology Symposium, KECS, Gwangju, South Korea
70. (2019.06.29) Materials Chemistry Mini Symposium, UC Berkeley, CA, USA
71. (2019.06.20) KCC Corporation, Yongin, South Korea
72. (2019.06.10) LG Chem, Daejeon, South Korea
73. (2019.05.31) Inha University, Incheon, South Korea
74. (2019.05.23) Spring symposium 2019, Society of Microscopy Symposium
75. (2019.05.02) Spring symposium 2019, The Korean Society of Industrial and Engineering Chemistry
76. (2019.03.07) Korean Institute of Science and Technology
77. (2019.01.16) Institute of Basic Science, Korea University, Seoul, South Korea
78. (2018.12.20) Department of Chemistry, Kyungpook National University, Daegu, South Korea
79. (2018.12.05) SpectroNanoscopy Workshop 2018, Seoul, South Korea

80. (2018.12.03) 2018 International Symposium on New Frontiers in Nano-Bio-Electronic Convergence Science and Technology (ISNBE 2018), Suwon, South Korea
81. (2018.11.28) Fall Symposium 2018, Korean Battery Society, Busan, South Korea
82. (2018.11.28) Department of Chemistry, Kyunghee University, Seoul, South Korea
83. (2018.11.12) 5th ERTL International Symposium, Gwangju, South Korea
84. (2018.11.08) Fall Symposium 2018, Materials Research Society of Korea, Yeosu, South Korea
85. (2018.11.07) Hanyang University, Ansan, South Korea
86. (2018.10.26) 2018 Fall Conference, The Korean Institute of Metals and Materials, Daejeon, South Korea
87. (2018.10.24) Electronics and Telecommunications Research Institute, Daejeon, South Korea
88. (2018.10.18) 2018 Fall Conference, Division of Physical Chemistry, Korean Chemical Society, Daegu, South Korea,
89. (2018.10.17) Chungnam National University, Daejeon, South Korea
90. (2018.09.18) Department of Mechanical Engineering Hayang University, Seoul, South Korea
91. (2018.09.13) 2018 Fall Symposium, Korean Society of Photon Science, Seoul, South Korea
92. (2018.09.03) Korea Research Institute of Chemical Engineering, Daejeon, South Korea
93. (2018.08.22) International Union Materials Research on International Conference on Electronic Materials, Daejeon, South Korea
94. (2018.08.22) International Union Materials Research on International Conference on Electronic Materials, Daejeon, South Korea
95. (2018.08.01) Max Planck Institute, Berlin, Germany
96. (2018.04.21) Daejoo Electronic Materials, South Korea
97. (2018.04.21) Department of Applied Chemistry, Kyunghee University
98. (2018.04.04) Graduate School of Convergence Science and Technology, Seoul National University, Suwon, South Korea
99. (2018.04.02) Department of Physics, Choong Ang University, Seoul, South Korea
100. (2018.03.21) Department of Chemistry, Sookmyung University, Seoul, South Korea
101. (2018.03.20) Department of Chemistry, Ewha Woman's University, Seoul, South Korea
102. (2018.03.15) Samsung Advanced Institute of Technology, Suwon, South Korea
103. (2018.02.08) 2018 Winter Symposium, Korean Chemical Society, Suwon, South Korea
104. (2018.01.11) Gacheon University, Sunghnam, South Korea
105. (2017.12.19) International Collaborative & Cooperative Chemistry Symposium, Hyderabad, India
106. (2017.11.24) Department of Chemistry, Pusan National University
107. (2017.11.24) 29th User Meeting, Pohang Accelerator Laboratory, Pohang, South Korea
108. (2017.11.21) International Conference on Advanced Electromaterials, Jeju, South Korea
109. (2017.11.20) KAIST international workshop on EEWS, Daejeon, South Korea
110. (2017.11.17) Asia-Korea Conference Science and Technology, Singapore
111. (2017.11.16) 2017 Fall Symposium, Materials Research Society of Korea, South Korea

- 112.(2017.11.08) International Symposium on High Performance Liquid Phase Separations and Related Techniques 2017, Jeju, South Korea
- 113.(2017.11.03) 2017 Fall Symposium, Korean Electrochemical Society, Jeju, South Korea
- 114.(2017.10.20) 2017 Fall Symposium, Korean Chemical Society, Daegu, South Korea
- 115.(2017.10.18) Department of Energy Science, Sungkyunwhan University, Suwon, South Korea
- 116.(2017. 09. 20) Department of Chemistry, Korean Advanced Institute of Science and Technology, Daejeon, South Korea
- 117.(2017. 09.04) 2017 SpectroNanoscopy Workshop, Seoul, Korea
- 118.(2017. 07. 20) 2017 Summer symposium, Korean Chemical Society, Jeju, South Korea
- 119.(2017. 07. 05) Clean Energy Research Center, Korea Institute of Science and Technology, Seoul, South Korea
- 120.(2017.05.18) 2017 Spring Conference, Materials Research Society of Korea, Mokpo , South Korea,
- 121.(2017.05.17) Department of Energy and Chemical Engineering, Ulsan National Institute of Science and Technology, “Single-level Spectro-microscopy for electrochemical systems”
- 122.(2017.05.18) Sunchon National University, Sunchon, South Korea
- 123.(2017.04.26) 2017 Operando Workshop, Gwangju, South Korea
- 124.(2017.04.20) 2017 Spring Conference, Division of Inorganic Chemistry, Korean Chemical Society, Goyang, South Korea
- 125.(2017.04.07) 2017 Spring Conference, Division of Physical Electrochemistry, Korean Electrochemical Society, Jeju, South Korea

Before SNU

- 126.(2016.02.21) Gordon Research Seminar, Ventura, CA, USA
- 127.(2015.10.6) 2015 Fall ALS User Meeting, Advance Light Source, Berkeley, CA, USA
- 128.(2013.11.4.) 2013 Annual Meeting, American Institute of Chemical Engineers, San Francisco, CA, USA
- 129.(2013.4.2) Award Competition Talk, Materials Research Society, San Francisco, CA, USA

CONTRIBUTED PRESENTATIONS

1. (2023.5) The Electrochemical Society, Boston, MA, USA
2. (2023.4) Materials Research Society, San Francisco, CA, USA
3. (2023.3) American Chemical Society, Indianapolis, IN, USA
4. (2020.2) Gordon Research Conference Batteries, Ventura, USA