

이 홍 경 (李弘旻, Hongkyung Lee, Ph.D.)



대구경북과학기술원 (DGIST)

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학 력

2011.02 - 2016.02 Ph.D. 생명화학공학과, 한국과학기술원 (KAIST)

2007.03 - 2011.02 B.S. 화공생명공학과, 연세대학교

경 력

2023.09 - 현재 부교수, 에너지공학과, DGIST

2019.10 - 2023.09 조교수, 에너지공학과, DGIST

2017.01 - 2019.09 Postdoc, 미국 Pacific Northwest National Laboratory (PNNL)

2016.01 - 2016.12 Postdoc, 응용과학연구소, KAIST

수상 내역

2021.12 포스코사이언스펠로십 (13기), 포스코청암재단

2021.05 제9회 미원상사 신진과학자상, 한국공업화학회

2018.12 2018 Team Of-the-Year (OTW) Award, PNNL

2017.12 Outstanding Performance Award, PNNL

주요 연구 내용 및 성과

- 차세대 전지용 고용량 금속 음극 (Li, Zn 등) 표면 안정화 기술
- 배터리 내부 전류 시각화 기술 및 전극 계면 열화 메커니즘 규명
- 상용전지 설계 및 전지 신뢰성/안전성 향상 연구
- 산학 협력 연구 수행 (현대자동차, 삼성 SDI, LG Energy Solutions, Evonik 등)
- 주요 논문 실적: Adv. Sci. (2023), Adv. Funct. Mater. (2022), Energy Environ. Mater. (2022), Small Methods (2022), Adv. Energy Mater. (2021), Chem. Eng. J. (2021, 2022), Nature Energy (2019), Joule (2019), ACS Energy Lett. (2018), Adv. Funct. Mater. (2017), Adv. Mater. (2016) 등 포함 총 77편 발표
- 저널 표지 10건 선정, 인용횟수 ~6800회 (2023년 4월 Google Scholar 기준)
- 이차전지 관련 특허 총 12건 (출원/등록 포함, 미국 1, 대한민국 11)

Selected Publications (주요 논문 발표)

- Hyuntae Lee†, Hyeongguk An†, Hongjun Chang†, Mingyu Lee, Seungsoo Park, Soyeon Lee, Jiwoong Kang, Seungwoo Byon, Bonhyeop Koo, Hochun Lee, Yong Min Lee, Janghyuk Moon*, Sujong Chae* and **Hongkyung Lee*** “Boosting Interfacial Kinetics in Extremely Fast Charging Li-ion Batteries with Linear Carbonate-based, LiPF₆-concentrated Electrolytes” *Energy Storage Materials* Accepted (2023)
- Mingyu Lee†, Yewon Shin†, Hongjun Chang, Dahee Jin, Hyuntae Lee, Minhong Lim, Jiyeon Seo, Tino Band, Kai Kaufmann, Janghyuk Moon*, Yong Min Lee* and **Hongkyung Lee*** “Diagnosis of Current Flow Patterns Inside Fault-Simulated Li-Ion Batteries via Non-Invasive, In Operando Magnetic Field Imaging” *Small Methods* Accepted for publication (2023). “Selected as “Editor’s Choice” and “Hot Topic: Magnetic Materials”
- Minhong Lim, Hyeongguk An, Jiyeon Seo, Mingyu Lee, Hyuntae Lee, Hyeokjin Kwon, Hee-Tak Kim, Daniel Esken, Ryo Takata, Hyun A Song and **Hongkyung Lee*** “Modulating Ionic Transport and Interface Chemistry via Surface-Modified Silica Carrier in Nano Colloid Electrolyte for Stable Cycling of Li-Metal Batteries” *Small Accepted* (2023). “Featured in Inside Back Cover Image”
- Jiyeon Seo, Wooyoung Jeong, Minhong Lim, Bokyoung Choi, Sanghyeon Park, Youngseong Jo, Jong-Won Lee* and **Hongkyung Lee*** “Electrodeposition-guided pre-passivation of Li-metal anode to enable long stable cycling of practical Li-metal batteries” *Energy Storage Materials* 60, 102827 (2023).
- Youngseong Jo†, Dahee Jin†, Minhong Lim†, Hyuntae Lee, Hyeongguk An, Jiyeon Seo, Gunyoung Kim, Xiaodi Ren, Yong Min Lee*, and **Hongkyung Lee*** “Structural and Chemical Evolutions of Li/Electrolyte Interfaces in Li-metal Batteries: Tracing Compositional Changes of Electrolytes under Practical Conditions” *Advanced Science* 10(2), 2204812 (2023).
- Hyeongguk An, Youngjoon Roh, Youngseong Jo, Hyuntae Lee, Yong Min Lee* and **Hongkyung Lee*** “Separator Dependency on Cycling Stability of Lithium Metal Batteries under Practical Conditions” *Energy & Environmental Materials*, 6(5), e12397 (2023).
- Minhong Lim, Suhwan Kim, Junsik Kang, Dahee Jin, Hyeongguk An, Hyuntae Lee, Joonam Park, Hochun Lee*, Yong Min Lee* and **Hongkyung Lee*** “Dynamic Ionic Transport Actuated by Nanospinbar-dispersed Colloidal Electrolytes Toward Dendrite-free Electrodeposition” *Advanced Functional Materials*, 32(40), 2204052 (2022). “Featured in Journal Front Cover”
- Byung Gon Kim*, Sang Wook Park, Hong Jun Choi, Jun-Woo Park, **Hongkyung Lee***, Jeong-Hee Choi “Highly Reversible Cycling of Zn-MnO₂ Batteries Integrated with Acid-treated Carbon Supportive Layer” *Small Methods*, 6(2), 2101060 (2022).
- Kisung Park†, Youngseong Jo†, Bonhyeop Koo, Sunwook Hwang, **Hongkyung Lee*** and Hochun Lee* “Wide Temperature Cycling of Li-metal Batteries with Hydrofluoroether Dilution of High-Concentration Electrolyte” *Chemical Engineering Journal*, 427, 131889 (2022).
- Dahee Jin, Young Joon Roh, Taejin Jo, Myung-Hyun Ryou*, **Hongkyung Lee*** and Yong Min Lee* “Robust Cycling of Ultrathin Li-metal Enabled by Nitrate-Preplanted Li Powder Composite” *Advanced Energy Materials* 11(18), 2003769 (2021).
- Jinhong Lee, Hyung-Seok Lim, Xia Cao, Xiaodi Ren, Won-Jin Kwak, Ismael A. Rodríguez Pérez, Ji-Guang Zhang, **Hongkyung Lee*** and Hee-Tak Kim*, “Lithium Dendrite Suppression with Silica Nanoparticle-Dispersed Colloidal Electrolyte” *ACS Applied Materials & Interfaces* 12 (33), 37188–37196 (2020).
- Chaojiang Niu†, **Hongkyung Lee†**, Shuru Chen, Qiuyan Li, Jason Du, Wu Xu, Ji-Guang Zhang, M. Stanley Whittingham, Jie Xiao*, Jun Liu*, “High-energy Li metal pouch cells with limited anode swelling and long stable cycles” *Nature Energy*, 4, 551–559 (2019).
- Shuru Chen†, Chaojiang Niu†, **Hongkyung Lee†**, Qiuyan Li, Lu Yu, Wu Xu, Ji-Guang Zhang, Eric J. Dufek, M. Stanley Whittingham, Shirley Meng, Jie Xiao*, Jun Liu* “Critical Parameters for Evaluating Coin Cells and Pouch Cells of Rechargeable Li Metal Batteries” *Joule*, 3(4), 1094–1105 (2019).
- Hongkyung Lee**, Hyung-Seok Lim, Xiaodi Ren, Lu Yu, Mark H. Engelhard, Kee Sung Han, Jinhong Lee, Hee-Tak Kim, Jie Xiao, Jun Liu, Wu Xu*, Ji-Guang Zhang* “Detrimental Effects of Chemical Crossover from the Lithium Anode to Cathode in Rechargeable Lithium Metal Batteries” *ACS Energy Letters*, 3, 2921–2930 (2018).
- Hongkyung Lee**, Xiaodi Ren, Chaojiang Niu, Lu Yu, Mark H. Engelhard, Inseong Cho, Myung-Hyun Ryou, Hyun Soo Jin, Hee-Tak Kim, Jun Liu, Wu Xu*, Ji-Guang Zhang* “Suppressing Lithium Dendrite Growth by Metallic Coating on Separator” *Advanced Functional Materials*, 27, 1704391 (2017).
- Dong Jin Lee†, **Hongkyung Lee†**, Yun-Jung Kim, Jung-Ki Park*, Hee-Tak Kim* “Sustainable Redox Mediation for Lithium-Oxygen Battery by Composite Protective Layer on Lithium Metal Anode”, *Advanced Materials*, 28, 857–863 (2016).

HONGKYUNG LEE, Ph.D.

Associate Professor

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Daegu Gyeongbuk Institute of Science and Technology (DGIST)
333 Techno Jungang-daero, Heyonpung-myeon, Dalseong-gun, Daegu 42988, South Korea
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EDUCATION

Ph.D	Korea Advanced Institute of Science and Technology (KAIST) , Daejeon, South Korea	2/2016
.	Chemical and Biomolecular Engineering Thesis title: Surface modification of Lithium Metal Anode for Advanced Lithium Batteries (Advisor: Prof. Jung-Ki Park)	
B.A.	Yonsei University , Seoul, South Korea	2/2011
	Chemical and Biomolecular Engineering	

PROFESSIONAL EXPERIENCES

Associate Professor	2023–Present
Department of Energy Science & Engineering Daegu Gyeongbuk Institute of Science and Technology (DGIST), Daegu, South Korea.	
Assistant Professor	2019–2023
Department of Energy Science & Engineering Daegu Gyeongbuk Institute of Science and Technology (DGIST), Daegu, South Korea.	
Postdoctoral Research Associate	2017–2019
Battery Materials and Systems Group (Principal Investigator: Dr. Ji-Guang (Jason) Zhang) Energy and Environment Directorate (EED), Pacific Northwest National Laboratory (PNNL), USA.	
Postdoctoral Researcher	2016
Electrochemical Energy Devices Group (Principal Investigator: Prof. Hee-Tak Kim) Applied Science Research Institute, KAIST, Daejeon, South Korea	

HONORS & AWARDS

POSCO Science Fellowship , POSCO TJ Park Foundation	2021
9th Miwon Corp. Young Scientist Award , The Korean Society of Industrial and Engineering Chemistry	2021
2018 Project Team of the Year , EED Of-the-Year (OTY) Awards, PNNL	2018
Fostering Next-Generation Researchers Program Grantee , National Research Foundation of Korea	2018
Outstanding Performance Award , PNNL	2017
Full National Grantee , KAIST	2011–2016
Graduate Excellence , Yonsei University	2011
National Scholarship of Science and Engineering , Korea Student Aid Foundation (KOSAF)	2007–2010

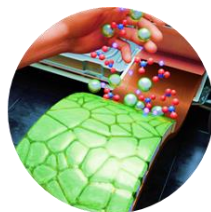
SCHOLARY ACTIVITIES

Memberships: The Korean Electrochemical Society (Associated Editor for E-Chem Magazine, 2020-present); The Korean Society of Industrial and Engineering Chemistry, International Battery Associate (IBA), The Electrochemical Society (ECS), Materials Research Society (MRS), etc.

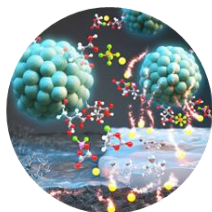
Journal peer reviewer: ACS Nano, ACS Energy Letters, Advanced Materials, Advanced Energy Materials, Advanced Functional Materials, Angewandte Chemie International Edition, Chemistry of Materials, Journal of Materials Chemistry A, ACS Applied Materials & Interfaces, Journal of Power Sources, Electrochemistry Communications, Electrochimica Acta, ChemSusChem, etc.

RESEARCH INTERESTS

- **Next-generation Battery Chemistry:** Li-metal, Advanced Li-ion, Li-Air, Li-Sulfur batteries
- **Interface Chemistry & Electrochemistry**
- **Battery Component Materials and Functional Coating:** Electrolytes, Separator, Current collector
- **Advanced Cell/Electrode Architectures:** Micro/Nano-Patterning; 3D Architecture; Li-metal Pouch Cells
- **Electrolyte Designs:** Electrolyte additives; Colloidal Electrolyte
- **Multi-modal Battery Imaging & Failure Diagnosis:** Magnetic-field imaging (MFI) for current distribution imaging; Pressure/thermal sensors-integrated cells
- **Sustainability for Batteries:** Sodium (Na)-ion batteries; Aqueous Zn-metal batteries; Dry-battery electrodes
- **Research Vision:** Re-think and pursue the 3S (Superiority, Smartness, Sustainability) of batteries



**Ultrathin,
Large-area
Li-metal anodes**



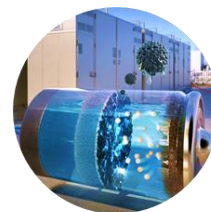
**Intelligent
Nano-colloid
Electrolytes**



**Superfast-
rechargeable
Li-ion batteries**



**Multi-modal
Imaging-driven
Battery Diagnosis**



**Building Safe,
Sustainable
Batteries**

SELECTED PUBLICATIONS

- M. Lim, H. Lee* "Dynamic Ionic Transport Actuated by Nanospinbar-dispersed Colloidal Electrolytes Toward Dendrite-free Electrodeposition" *Advanced Functional Materials*, *Accepted for publication* (2022).
- D. Jin, H. Lee*, Y. M. Lee* et al. "Robust Cycling of Ultrathin Li-metal Enabled by Nitrate-Preplanted Li Powder Composite" *Advanced Energy Materials* 11(18), 2003769 (2021).
- C. Niu†, H. Lee† et al. "High-energy Li metal pouch cells with limited anode swelling and long stable cycles" *Nature Energy* 4, 551–559 (2019) (**I.F. = 46.859**, JCR Ranking **1/97** in *Energy & Fuels*).
- S. Chen†, C. Niu†, H. Lee† et al. * "Critical Parameters for Evaluating Coin Cells and Pouch Cells of Rechargeable Li Metal Batteries" *Joule* 3(4), 1094 (2019) (Elsevier CiteScoreTracker (Scopus) 2018 = 12.190).
- H. Lee et al. "Detrimental Effects of Chemical Crossover from the Lithium Anode to Cathode in Rechargeable Lithium Metal Batteries" *ACS Energy Letters* 3, 2921 (2018) (**I.F. = 12.277**, JCR Ranking **1/28** in *Electrochemistry*).
- H. Lee et al. "Suppressing Lithium Dendrite Growth by Metallic Coating on Separator" *Advanced Functional Materials* 27, 1704391 (2017) (**I.F. = 13.325**, JCR Ranking **13/285** in *Materials Science, Multidisciplinary*).
- D. J. Lee†, H. Lee† et al. "Sustainable Redox Mediation for Lithium-Oxygen Battery by Composite Protective Layer on Lithium Metal Anode", *Advanced Materials*, 28, 857 (2016) (**I.F. = 21.950**, JCR Ranking **2/147** in *Chemistry, Physical*).

JOURNAL PUBLICATIONS

Peer-reviewed SCI(E) Journal Articles

Total 79 papers, *h*-index: 37, Total Citation: ~6700 (Google Scholar, 10/2023)

Find scholarly metrics at [Google Scholar](https://scholar.google.com/citations?user=H. Lee) or [Researchgate](https://orcid.org/0000-0001-9122-4444) († equal contribution, * corresponding author).

79. Hyuntae Lee†, Hyeonnguk An†, Hongjun Chang†, Mingyu Lee, Seungsoo Park, Soyeon Lee, Jiwoong Kang, Seungwoo Byon, Bonhyeop Koo, Hochun Lee, Yong Min Lee, Janghyuk Moon*, Sujong Chae* and Hongkyung Lee* "Boosting Interfacial Kinetics in Extremely Fast Charging Li-ion Batteries with Linear Carbonate-based, LiPF₆-concentrated Electrolytes" *Energy Storage Materials* *Accepted* (2023).
78. Mingyu Lee†, Yewon Shin†, Hongjun Chang, Dahee Jin, Hyuntae Lee, Minhong Lim, Jiyeon Seo, Tino Band, Kai Kaufmann, Janghyuk Moon*, Yong Min Lee* and Hongkyung Lee* "Diagnosis of Current Flow Patterns Inside

- Fault-Simulated Li-Ion Batteries via Non-Invasive, In Operando Magnetic Field Imaging” *Small Methods Accepted* (2023).
 - Selected as "Editor's Choice"
 - Selected in “**Wiley-VCH Hot Topic**: Magnetic Materials”
77. Mingyu Lee†, Jiwon Lee†, Yewon Shin† and **Hongkyung Lee*** “Multi-scale Imaging Techniques for Real-time, Non-invasive Diagnosis of Li-ion Battery Failures” *Small Science Accepted* (2023).
 76. Minhong Lim, Hyeongguk An, Jiyeon Seo, Mingyu Lee, Hyuntae Lee, Hyeokjin Kwon, Hee-Tak Kim, Daniel Esken, Ryo Takata, Hyun A Song and **Hongkyung Lee*** “Modulating Ionic Transport and Interface Chemistry via Surface-Modified Silica Carrier in Nano Colloid Electrolyte for Stable Cycling of Li-Metal Batteries” *Small Accepted* (2023).
 - Featured in “Inside Back Cover Image”
 75. **Hyeongguk An**, Youngjoon Roh, **Youngseong Jo**, **Hyuntae Lee**, Yong Min Lee* and **Hongkyung Lee*** "Separator Dependency on Cycling Stability of Lithium Metal Batteries under Practical Conditions" *Energy & Environmental Materials*, 6(5), e12397 (2023).
 74. Seungyeop Choi, Nayeon Kim, Dahee Jin, Youngjoon Roh, Hyungjin Lee, Seung-Tae Hong, **Hongkyung Lee*** and Yong Min Lee* “Systematic study on Li dendrite growth and suppression in pouch-type lithium-ion batteries with misaligned electrode pairs” *Journal of Power Sources* 579, 233265 (2023).
 73. Jiyeon Seo, Wooyoung Jeong, Minhong Lim, Bokyung Choi, Sanghyeon Park, Youngseong Jo, Jong-Won Lee* and **Hongkyung Lee*** “Electrodeposition-guided pre-passivation of Li-metal anode to enable long stable cycling of practical Li-metal batteries” *Energy Storage Materials* 60, 102827 (2023).
 72. **Hyuntae Lee†**, Cheol Bak†, **Minhong Lim**, **Hyeongguk An**, Seungwoo Byun, Yong Min Lee* and **Hongkyung Lee*** “Preplanting Nanosilica into Binder-less Battery Electrodes for High-performance Li-ion Batteries” *ACS Applied Nano Materials* 6(4), 3128–3137 (2023).
 71. **Byungjun Choi†**, **Mingyu Lee†**, Sang-Gil Woo, Goojin Jeong, **Hongkyung Lee***, Je-Nam Lee*, Ji-Sang Yu, “Importance of Uniformly Redistributing External Pressure on Cycling of Pouch-type Li-metal Batteries” *Korean Journal of Chemical Engineering* 40(3), 524–531 (2023). [IF=3.146]
 70. **Youngseong Jo†**, Dahee Jin†, **Minhong Lim†**, **Hyuntae Lee**, **Hyeongguk An**, **Jiyeon Seo**, **Gunyoung Kim**, Xiaodi Ren, Yong Min Lee*, and **Hongkyung Lee*** “Structural and Chemical Evolutions of Li/Electrolyte Interfaces in Li-metal Batteries: Tracing Compositional Changes of Electrolytes under Practical Conditions” *Advanced Science* 10(2), 2204812 (2022). [IF=17.521]
 69. Dongyoon Kang†, Dahee Jin†, Janghyuk Moon†, Cyril Bubu Dzakpasu, Hyobin Lee, Seungyeop Choi, Taejin Jo, **Hongkyung Lee***, Sun-Yul Ryou*, and Yong Min Lee* “AgNO₃-Preplanted Li Metal Powder Electrode: Preliminary Formation of Lithiophilic Ag and a Li₃N-rich Solid Electrolyte Interphase” *Chemical Engineering Journal* 452, 139409 (2023). [IF=16.744]
 68. Cyril Bubu Dzakpasu†, Dahee Jin†, Dongyoon Kang, Nayeon Kim, Taejin Jo, **Hongkyung Lee***, Myung-Hyun Ryou*, and Yong Min Lee* “Bifunctional role of carbon nanofibrils within Li powder composite anode: More Li nucleation but less Li isolation” *Electrochimica Acta* 430, 141093 (2022). [IF=7.336]
 67. **Minhong Lim**, Suhwan Kim, Junsik Kang, Dahee Jin, Hyeongguk An, Hyuntae Lee, Joonam Park, Hochun Lee*, Yong Min Lee* and **Hongkyung Lee*** "Dynamic Ionic Transport Actuated by Nanospinbar-dispersed Colloidal Electrolytes Toward Dendrite-free Electrodeposition" *Advanced Functional Materials*, 32(40), 2204052 (2022).
 - Featured in “**Front Cover Picture**”.
 66. Jihun Song†, Dong Ok Shin†, Seungwoo Byun, Youngjoon Roh, Cheol Bak, Juhye Song, Jaechol Choi, **Hongkyung Lee**, Tae-Soon Kwon, Young-Gi Lee*, Myung-Hyun Ryou*, Yong Min Lee* “A New Perspective on the Advanced Microblade Cutting Method for Reliable Adhesion Measurement of Composite Electrodes” *Journal of Electrochemical Science and Technology* 13(2), 227-236 (2022).
 65. Suhwan Kim, Jihun Song, Hyobin Lee, Seungwon Jung, Joonam Park, **Hongkyung Lee*** and Yong Min Lee* “An Electrochemical-Thermal Model for Simulating the Effects of Internal Short Circuits in a Li-Ion Battery: Sizes, Quantities, and Locations of Li Dendrites” *Frontiers in Materials*, 9, 850610 (2022).
 64. Jihun Song, Hyobin Lee, Suhwan Kim, Dongyoon Kang, Seungwon Jung, **Hongkyung Lee**, Tae-Soon Kwon and Yong Min Lee* “A thermo-electrochemical model of 18.5 V/50 Ah battery module for railway vehicles” *Frontiers in Materials*, 9, 824168 (2022).
 63. Byung Gon Kim*, Sang Wook Park, Hong Jun Choi, Jun-Woo Park, **Hongkyung Lee***, Jeong-Hee Choi "Highly Reversible Cycling of Zn-MnO₂ Batteries Integrated with Acid-treated Carbon Supportive Layer" *Small Methods*, 6(2), 2101060 (2022).
 - Featured in “**Inside Back Cover Picture**”.

62. Kisung Park†, Youngseong Jo†, Bonhyeop Koo, Sunwook Hwang, **Hongkyung Lee*** and Hochun Lee* "Wide Temperature Cycling of Li-metal Batteries with Hydrofluoroether Dilution of High-Concentration Electrolyte" *Chemical Engineering Journal*, 427, 131889 (2022).
61. Sukhyung Lee, Bon-Hyeop Koo, Seokbum Kang, **Hongkyung Lee*** and Hochun Lee* "Hydrofluoroether-assisted Dilution of Na-ion Concentrated Ionic Liquid Electrolyte for Safe, Stable Cycling of High-Voltage Na-metal Batteries" *Chemical Engineering Journal* 425, 130612 (2021).
60. Wonhee Cho, Hong Suk Kang, Jaeho Choi, Jinkwan Jung, Jonghyun Hyun, Jaehyung Kwon, Ilju Kim, **Hongkyung Lee** and Hee-Tak Kim* "Light-designed Shark Skin-mimetic Surfaces" *Nano letters* 21(13), 5500–5507 (2021).
59. Dahee Jin, Young Joon Roh, Taejin Jo, Myung-Hyun Ryou*, **Hongkyung Lee*** and Yong Min Lee* "Robust Cycling of Ultrathin Li-metal Enabled by Nitrate-Preplanted Li Powder Composite" *Advanced Energy Materials* 11(18), 2003769 (2021). "[Featured in Back Cover Image](#)"
58. Zulipiya Shadike, **Hongkyung Lee**, Oleg Borodin, Xia Cao, Xiulin Fan, Xuelong Wang, Ruoqian Lin, Seong-Min Bak, Sanjit Ghose, Kang Xu, Chunsheng Wang, Jun Liu, Jie Xiao*, Xiao-Qing Yang*, Enyuan Hu* "Identification of LiH and nanocrystalline LiF in the solid electrolyte interphase of lithium metal anodes" *Nature Nanotechnology* 16, 549–554 (2021).
57. Xia Cao, Lianfeng Zou, Bethany E. Matthews, Linchao Zhang, Xinzi He, Xiaodi Ren, Mark H. Engelhard, Sarah D. Burton, Patrick Z. El-Khoury, Hyung-Seok Lim, Chaojiang Niu, **Hongkyung Lee**, Chunsheng Wang, Bruce W. Arey, Chongmin Wang, Jie Xiao, Jun Liu, Wu Xu* and Ji-Guang Zhang* "[Optimization of Fluorinated orthoformate based electrolytes for practical high-voltage lithium metal batteries](#)" *Energy Storage Materials* 34, 76–84 (2021).
56. Dahee Jin, Youngjoon Roh, Taejin Jo, Dong Ok Shin, Juhye Song, Ju Young Kim, Young-Gi Lee, **Hongkyung Lee***, Myung-Hyun Ryou* and Yong Min Lee* "Submicron interlayer for stabilizing thin Li metal powder electrode" *Chemical Engineering Journal* 406, 126834 (2021).
55. Joonam Park, Kyung Taek Bae, Dohwan Kim, Wooyoung Jeong, Ji-Eun Nam, Myeong Ju Lee, Dong Ok Shin, Young-Gi Lee, Hongkyung Lee, Kang Taek Lee* and Yong Min Lee* "Unraveling the Limitations of Solid Oxide Electrolytes for All-Solid-State Electrodes through 3D Digital Twin Structural Analysis" *Nano Energy* 79, 105456 (2021).
54. Xiaodi Ren, Peiyuan Gao, Lianfeng Zou, Shuhong Jiao, Xia Cao, Xianhui Zhang, Hao Jia, Mark H. Engelhard, Bethany E. Matthews, Haiping Wu, **Hongkyung Lee**, Chaojiang Niu, Chongmin Wang, Bruce W. Arey, Jie Xiao, Jun Liu, Ji-Guang Zhang*, Wu Xu* "Role of Inner Solvation Sheath within Salt-Solvent Complexes in Tailoring Electrode/Electrolyte Interphases for Lithium Metal Batteries " *Proceedings of the National Academy of Sciences of the United States of America*, 117 (46), 28603-28613 (2020).
53. Lili Shi, Seong-Min Bak, Zulipiya Shadike, Chengqi Wang, Chaojiang Niu, Paul Northrup, **Hongkyung Lee**, Arthur Y Baranovskiy, Cassidy S Anderson, Jian Qin, Shuo Feng, Xiaodi Ren, Dianying Liu, Xiao-Qing Yang, Fei Gao, Dongping Lu, Jie Xiao, Jun Liu "Reaction Heterogeneity in Practical High-Energy Lithium-Sulfur Pouch Cell" *Energy & Environmental Science* Online Published (2020).
52. Jinhong Lee, Hyung-Seok Lim, Xia Cao, Xiaodi Ren, Won-Jin Kwak, Ismael A. Rodríguez Pérez, Ji-Guang Zhang, **Hongkyung Lee*** and Hee-Tak Kim*, "Lithium Dendrite Suppression with Silica Nanoparticle-Dispersed Colloidal Electrolyte" *ACS Applied Materials & Interfaces* 12 (33), 37188–37196 (2020).
51. Sukhyung Lee, Kisung Park, Bon-Hyeop Goo, Changhun Park, Minchul Jang, **Hongkyung Lee** and Hochun Lee* "Safe, Stable Cycling of Lithium Metal Batteries with Low-Viscosity, Fire-Retardant Locally Concentrated Ionic Liquid Electrolytes" *Advanced Functional Materials* 30, 2003132 (2020).
- Featured in [Inside Cover Picture](#)
50. Eunho Cha, **Hongkyung Lee**, Wonbong Choi* "Improving Lithium-Metal Battery Performance under the Conditions of Lean Electrolyte through MoS₂ coating" *ChemElectroChem*, 7(4) 890-892 (2020)
- Featured in "Journal Cover Picture"
- Highlighted in "Hot Topic: Batteries and Supercapacitors"
49. Bingbin Wu†, Yang Yang†, Dianying Liu, Chaojiang Niu, Mark Gross, Lorraine Seymour, **Hongkyung Lee**, Phung M. L. Le, Thanh D. Vo, Zhiqun Daniel Deng, Eric J. Dufek, M. Stanley Whittingham, Jun Liu and Jie Xiao* "Good Practices for Rechargeable Lithium Metal Batteries" *Journal of The Electrochemical Society* 166 (16), A4141-A4149 (2019).

↑↑↑ After joining DGIST ↑↑↑

48. Zhe Peng, Junhua Song, Liyuan Huai, Haiping Jia, Biwei Xiao, Guomin Zhu, Abraham Martinez, Swadiptra Roy, Vijayakumar Murugesan, **Hongkyung Lee**, Xiaodi Ren, Qiuyan Li, Bin Liu, Xiaolin Li, Deyu Wang*, Wu Xu* and Ji-Guang Zhang* "Enhanced Stability of Li Metal Anodes by Synergetic Control of Nucleation and the Solid Electrolyte Interphase" *Advanced Energy Materials* 9 (42), 1901764 (2019).
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7. **Hongkyung Lee**, Xiaodi Ren, Lu Yu, Chaojiang Niu, Mark H. Engelhard, Jun Liu, Wu Xu, Ji-Guang Zhang, Metallic Copper Thin Film Coating on Anode side of Polymer Separator to Suppress Lithium Dendrite Growth in Lithium Metal Batteries, FY17 Q3 Review Meeting of Battery500 Consortium, Jul 11-12, 2017, University of Washington, Seattle, WA, USA.
8. **Hongkyung Lee**, Xiaodi Ren, Chaojiang Niu, Lu Yu, Mark H. Engelhard, Jun Liu, Wu Xu, Ji-Guang Zhang, Lithium Metal Dendrite Suppression by Simple Metallic Coating on Separator, International Conference on Advanced Lithium Batteries for Automobile Applications (ABAA-10), Oct 23-25, 2017, Chicago Marriott Oak Brook, Chicago, IL, USA.
9. **Hongkyung Lee**, Interface Control of Lithium Metal Anodes for Advanced Lithium Batteries, Korea Research Institute of Chemical Technology (KRICT), Dec 11, 2017, Daejeon, South Korea (Host: Dr. Do Youb Kim) (Invited)
10. **Hongkyung Lee**, Interface Control of Lithium Metal Anodes for Advanced Lithium Batteries, Korea Institute of Energy Research (KIER), Dec 12, 2017, Daejeon, South Korea (Host: Dr. Yonghyun Cho) - Invited Talk
11. **Hongkyung Lee**, Interface Control of Lithium Metal Anodes for Advanced Lithium Batteries, Electronics & Telecommunication Research Institute (ETRI), Dec 14, 2017, Daejeon, South Korea (Host: Dr. Young-Gi Lee) - Invited Talk
12. **Hongkyung Lee**, Interface Control of Lithium Metal Anodes for Advanced Lithium Batteries, Hanbat National University, Dec 15, 2017, Daejeon, South Korea (Host: Prof. Myung-Hyun Ryou) - Invited Talk
13. **Hongkyung Lee**, Shuru Chen, Xiaodi Ren, Abraham Martinez, Vaithiyalingam Shutthanandan, Murugesan Vijayakumar, Kee Sung Han, Qiuyan Li, Jun Liu, Wu Xu, Ji-Guang Zhang, Effect of Open Space in the Edge of Electrodes on the Design of Lithium Metal Batteries, FY18 Q2 Review Meeting of Battery500 Consortium, May 10-11, 2018, University of Washington, Seattle, WA, USA
14. **Hongkyung Lee**, Xiaodi Ren, Chaojiang Niu, Lu Yu, Mark H. Engelhard, Jun Liu, Wu Xu, Ji-Guang Zhang, A Simple Metallic Coating on Separator for Lithium Dendrite Suppression, The 233rd ECS Meeting, May 17, 2018, Washington State Convention Center, Seattle, WA, USA.

15. **Hongkyung Lee**, Chaojiang Niu, Dianying Liu, Jie Xiao, Jun Liu, Lightweight Anode Current Collector, FY18 Q4 Review Meeting of Battery500 Consortium, November 1-2, 2018, PNNL Discovery Hall, Richland, WA, USA.
16. **Hongkyung Lee**, Stabilization of Lithium Metal Anode for High-Energy Lithium Metal Batteries, Korea Electronics Technology Institute (KETI), Feb 7, 2019, Seongnam, South Korea (Host: Dr. Je-Nam Lee) - Invited Talk
17. **Hongkyung Lee**, Hyung-Seok Lim, Xiaodi Ren, Mark Engelhard, Kee Sung Han, Jie Xiao, Jun Liu, Wu Xu, Ji-Guang Zhang, Detrimental Effects of Chemical Cross-Talk in Rechargeable Lithium Metal Batteries, 2019 International Battery Association Meeting (IBA 2019), March 3-9, 2019, Scripps Forum Hall, La Jolla, CA, USA.

↓↓↓ After joining DGIST ↓↓↓

18. **Hongkyung Lee**, 상용 수준에서의 리튬 금속 전지 사이클 성능 개선에 관한 연구, 2019 Fall Meeting of the Korean Electrochemical Society (KECS), Nov 7, 2019, Yeosu Expo Convention Center, Yeosu, South Korea. - Invited Talk
19. **Hongkyung Lee**, Improving Li metal battery performance through interface engineering and cell designs, 7th DGIST-WASEDA Electrochemistry Workshop, Waseda University (Nish-Waseda Campus), Nov 18, 2019, Tokyo, Japan (Host: Prof. Toshiyuki Momma & Prof. Tetsuya Osaka) - Invited Talk
20. **Hongkyung Lee**, Multi-scale Interface Engineering Approaches for Advanced Lithium Metal Batteries, Korea Research Institute of Chemical Technology (KRICT), Dec 12, 2019, Daejeon, South Korea (Host: Dr. Jung Don Seok) - Invited Talk
21. **Hongkyung Lee**, Stabilization of Li-Metal Anode through Multi-scale Interface Engineering Approaches, Korea Electrotechnology Research Institute (KERI), Dec 18, 2019, Changwon, South Korea (Host: Dr. Sang Min Lee & Dr. Byung Gon Kim) - Invited Talk
22. **Hongkyung Lee**, A Rational Cell Design and Engineering towards Practical Li-metal Batteries, The 3rd KIST-DGIST Joint Workshop, Jan 17, 2020, Jeonbuk, South Korea - Invited Talk
23. **Hongkyung Lee**, Cell Design and Engineering towards Practical Li-metal Batteries, Korea Electrotechnology Research Institute (KERI), May 7, 2020, Changwon, South Korea (Host: Dr. Jung Hee Choi) - Invited Talk
24. **Hongkyung Lee**, Practical Cell Design and Engineering for Li-metal Batteries: Towards High-energy, Long-cycling, and Safety, Hanyang University (ERICA Campus) July 30, 2020, Ansan, South Korea (Host: Prof. Kuk Young Cho) - Invited Talk
25. **Hongkyung Lee**, Won-Jin Kwak, Jinhong Lee, Hee-Tak Kim, Hyung-Seok Lim, Xia Cao, Xiaodi Ren, Ismael Rodriguez-Perez, Ji-Guang Zhang, Suppressing Lithium Dendrite Growth with Nanoparticle-Dispersed Colloidal Electrolytes, PRiME 2020, Oct 5, 2020 - Invited Talk
26. **Hongkyung Lee**, 고에너지밀도 리튬금속전지 구현을 위한 멀티스케일 전극 계면 제어 기술 (신진과학자포럼), 2020 Fall Meeting of Korean Society of Industrial and Engineering Chemistry (KSIEC), Oct 29, 2020, ICC Jeju, Jeju Island, South Korea.
27. **Hongkyung Lee**, Interface Chemistry and Engineering Approaches for Stable, High-energy Li-metal Batteries, Ajou University, Nov 11, 2020, Suwon, South Korea (Host: Prof. Won-Jin Kwak) - Invited Talk
28. **Hongkyung Lee**, Search for Stable Separators for Lithium Metal Batteries, Korea Electronics Technology Institute (KETI), Dec 21, 2020, Seongnam, South Korea (Host: Dr. Je-Nam Lee) - Invited Talk
29. **Hongkyung Lee**, Interface Chemistry and Cell Engineering Towards Stable, High-energy Li-metal Batteries in Practice, Samsung SDI, Mar 16, 2021, Suwon, South Korea (Host: Dr. Jong Seok Moon) - Invited Talk
30. **Hongkyung Lee**, 차세대 리튬금속전지의 합리적 설계를 위한 주요 인자 연구, 2021 Spring Meeting of Korean Society of Industrial and Engineering Chemistry (KSIEC), May 14, 2021, BEXCO, Busan, South Korea. - Invited Talk
31. **Hongkyung Lee**, 상용수준의 리튬금속전지 구현을 위한 리튬 음극 계면 안정화 기술, 2021 Korean Battery Symposium (KECS), Jul 1, 2021, BEXCO, Busan, South Korea. - Invited Talk
32. **Hongkyung Lee**, 고안전성 박막 리튬음극용 표면개질 첨가제/리튬금속분말 복합전극기술, 2021 Spring Meeting of the Korean Battery Society (KOBS), Jul 30, 2021 (Online). - Invited Talk
33. **Hongkyung Lee**, Building Practical High-energy Long-cycling Li-metal Batteries: Materials & Interfaces, 2021 Young Researcher Group Joint Symposium (Early-Career Frontiers in Emerging Battery Materials Research), Aug 9, 2021 (Online) (Host: Prof. Won-Jin Kwak & Prof. Jong Kook Hwang) - Invited Talk
34. **Hongkyung Lee**, Current Distribution of Fast-charging Li-ion Batteries through Non-invasive, Real-time Magnetic Field Imaging, Korea Electronics Technology Institute (KETI), Aug 11, 2021, Seongnam, South Korea (Host: Dr. Goojin Jeong) - Invited Talk

35. **Hongkyung Lee**, Multi-scale Interface Engineering Toward Practical Li-metal Batteries, Korea Institute of Ceramic Engineering and Technology (KICET), Aug 18, 2021, Jinju, South Korea (Host: Dr. Dae Soo Jung) - Invited Talk
36. **Hongkyung Lee**, Interface Chemistry and Engineering Approaches Toward Practical Li-metal Batteries, Ulsan National Institute of Science and Technology (UNIST), Oct 18, 2021, Ulsan, South Korea (Host: Prof. Dong Hwa Seo) - Invited Talk
37. **Hongkyung Lee**, Lithium/Electrolyte Interface Engineering Towards Practical Li-metal Batteries, 72nd Annual Meeting of the International Society of Electrochemistry (ISE), Aug 31, 2021, Jeju, South Korea
38. **Hongkyung Lee**, Interface chemistry and engineering approaches for Li-metal anode stabilization, LG Energy Solutions, Jan 20, 2022, Seoul, South Korea (Host: Dr. Soo Hyun Kim) - Invited Talk
39. **Hongkyung Lee**, Advanced Battery Separators for Stable Cycling of Metallic Anodes, Korea Institute of Industrial Technology (KITECH), Apr 20, 2022, Jeju, South Korea (Host: Dr. Chanhon Kim) - Invited Talk
40. **Hongkyung Lee**, Suppressing Lithium Dendrite through Nanoparticle-Dispersed Colloidal Electrolytes, 2022 Spring Meeting of The Korean Institute of Chemical Engineers (KICHe), Apr 21, 2022, Jeju, South Korea - Invited Talk
41. **Hongkyung Lee**, How to suppress Li dendrites: reframing ionic transport and interphases, Electronics & Telecommunication Research Institute (ETRI), Dec 14, 2017, Daejeon, South Korea (Host: Jimin Oh) - Invited Talk
42. **Hongkyung Lee**, Advanced Battery Separators for Stable Cycling of Metallic Anodes, Yonsei University, Jan 29, 2022, Seoul, South Korea (Host: Prof. Jeonghun Kim) - Invited Talk
43. **Hongkyung Lee**, How to suppress Li dendrites: reframing ionic transport and interphases, Samsung SDI, Oct 18, 2021, Ulsan, South Korea - Invited Talk
44. **Hongkyung Lee**, How to suppress Li dendrites: reframing ionic transport and interphases, Ulsan National Institute of Science and Technology (UNIST), Oct 18, 2021, Ulsan, South Korea (Host: Prof. Dong Hwa Seo) - Invited Talk
45. **Hongkyung Lee**, Battery Materials and Diagnosis through Magnetic Field Transmission, 2022 Fall Meeting of Korean Society of Industrial and Engineering Chemistry (KSIEC), Oct 29, 2022, BEXCO, Busan, South Korea - Invited Talk
46. **Hongkyung Lee**, Reframing ionic transport and interphases through nano colloidal electrolytes for Li-metal batteries, 2022 Brainlink X-Lab Day (KOFST), Nov 2022, Incheon, South Korea - Invited Talk
47. **Hongkyung Lee**, Reframing ionic transport and interphases through nano colloidal electrolytes for Li-metal batteries, 8th DGIST-WASEDA Electrochemistry Workshop, Nov 18, 2022, Busan, South Korea - Invited Talk
48. **Hongkyung Lee**, 자기장을 활용한 배터리 소재 및 이미징 분석 기술 개발, 2022 Fall Meeting of the Korean Battery Society (KOBS), Dec, 2021, Jeonnam National University, Gwangju, South Korea - Invited Talk
49. **Hongkyung Lee**, 리튬금속전지 성능 개선을 위한 리튬금속 표면 안정화 기술, NEBA Corp. Jan 2023, Daejeon, South Korea - Invited Talk
50. **Hongkyung Lee**, Magnetically Guided-Current Manipulation and Imaging-driven Diagnosis for Lithium Batteries, Korea Institute of Industrial Technology (KITECH), Feb 2023, Jeju, South Korea (Host: Dr. Chanhon Kim) - Invited Talk
51. **Hongkyung Lee**, Magnetically Guided Diagnosis and Therapy for Uniform Current Distribution inside Rechargeable Batteries, POSTECH, Feb 2023, Pohang, South Korea (Host: Prof. Changshin Jo) - Invited Talk
52. **Hongkyung Lee**, Current Flow Pattern Analysis of Fault-simulated Lithium-ion Batteries through Magnetic Field Imaging, 2023 Spring Meeting of the Korean Electrochemical Society (KECS), Apr 6, 2023, Jeju, South Korea - Invited Talk