Mun Sek Kim

Web: www.munsekkim.com
Email: rlantj@stanford.edu

EDUCATION

09/2019 – Present	**Stanford University** Doctor of Philosophy (Ph.D.) in Chemical Engineering	**California, USA**
08/2014 – 05/2016	**Cornell University** Master of Science (M.S.) in Chemical and Biomolecular Engineering	**New York, USA**
08/2010 – 05/2014	**University of California, Berkeley** Bachelor of Science (B.S.) in Chemical & Biomolecular Engineering	**California, USA**

EXPERIENCE

01/2020 – Present

Nanomaterials Science and Engineering Lab with Professor Yi Cui
Stanford University
Graduate Student Researcher
(Advisor/Dissertation committees: Yi Cui, Zhenan Bao, and Jian Qin)

- Revealing features of inorganic solid-electrolyte interphase components for lithium metal anodes
- Developing suspension electrolytes for lithium metal batteries

06/2022 – 08/2022

Cell E-Chem design engineer
Rivian automaker company
Internship

- Developed battery electrode evaluation and material screening protocols
- Electrochemical analyses on the battery electrodes and electrolytes

07/2016 – 07/2019

Center for Energy Storage Research
Korea Institute of Science and Technology
Research Scientist
(In lieu of military service)

- Designed artificial solid-electrolyte interphases for lithium batteries
- Developed Langmuir-Blodgett artificial solid-electrolyte interphase for metallic lithium anodes
- Optimized electrolyte formulations to derive robust solid-electrolyte interphases for lithium battery electrodes

08/2014 – 06/2016

Electrochemical Energy Storage Laboratory with Professor Lynden A. Archer
Cornell University
Graduate Student Researcher
(Advisor: Lynden A. Archer)

- Developed Langmuir-Blodgett Scooping (layer-by-layer, large-scale, nanoparticulate, binder-free, and multi-component) coating techniques for battery technologies
- Developed separator modification strategies with diverse coating configurations and materials designed for high-performance lithium-sulfur batteries
- Developed interfacial engineering for lithium battery electrodes
- Developed chemical functionalization routes for battery materials

05/2011 – 05/2014

Applied Materials & Surface Science Laboratory with Professor Roya Maboudian
University of California, Berkeley
Undergraduate Student Researcher
(Advisor: Roya Maboudian)

- Developed a thin film transfer technique for flexible micro-supercapacitor electrodes
- Fabricated bicontinuous 3D graphene networks with controllable geometry for the micro-supercapacitor electrodes
- Developed a pyrolysis technique for photoresist-derived porous carbon electrodes for on-chip micro-supercapacitors
- Fabricated silicon carbide nanowires for high-voltage materials for the micro-supercapacitor electrodes
- Fabricated electrochemically activated porous carbon film for high energy density pseudocapacitive micro-supercapacitor electrodes

12/2012 – 01/2013

Korea Electrotechnology Research Institute
Internship

- Fabricated electrocardiography (ECG) device with a patented piezoresistive pressure sensor
- Optimized polydimethylsiloxane (PDMS) thicknesses for the pressure sensor *via* simulation using Abaqus
- Calibrated the pressure sensor based on the surrounding and contact temperatures *via* Lab View

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Email: rlantj@stanford.edu

PUBLICATIONS

Peer-Reviewed Research Papers

- **M.S. Kim**†, J. Wang†, W. Zhang†, P. Sayavong, S. T. Oyakhire, S. B. Shuchi, S. C. Kim, Z. Zhang, Y. Chen, Y. Cui, Z. Yu, H. Gong, R. Xu, J. H. Lee, J. Lee, S. F. Bent, K. A. Persson, J. Qin, Z. Bao, Y. Cui, in preparation.

- **M.S. Kim**, Z. Zhang, J. Wang, S. T. Oyakhire, S. C. Kim, Y. Zhiao, Y. Chen, D. T. Boyle, Y. Ye, Z. Huang, W. Zhang, R. Xu, P. Sayavong, S. F. Bent, J. Qin, Z. Bao, Y. Cui, "*Revealing the multi-functions of Li_3N in the suspension electrolyte for lithium metal batteries"*, ACS Nano 17(3), 3168-3180 (2023).

- **M.S. Kim**†, Z. Zhang†, P. Rudnicki, Z. Yu, J. Wang, S. T. Oyakhire, Y. Chen, S.C. Kim, W. Zhang, D. T. Boyle, X. Kong, R. Xu, Z. Huang, W. Huang, S. F. Bent, L.W. Wang, J. Qin, Z. Bao, Y. Cui, "*Suspension electrolyte with modified Li^+ solvation environment for lithium metal batteries*", Nature Materials 21, 445-454 (2022).

- S. Lee†, **M.S. Kim**†, J.-H. Lee, J.-H. Ryu, V. Do, B.G. Lee, W. Kim, W.I. Cho, "*Li-In alloy anode and Nb_2CTX_2 artificial solid-electrolyte interphase for practical Li metal batteries*", Journal of Materials Chemistry A 10, 4157-4169 (2022).

- **M.S. Kim**, Deepika, S.H. Lee, M.-S. Kim, J.-H. Ryu, K.-R. Lee, L.A. Archer, W.I. Cho, *"Enabling reversible redox reactions in electrochemical cells using protected LiAl intermetallics as lithium metal anodes",* Science Advances **5**, eaax5587 (2019).

- **M.S. Kim**, J.-H. Ryu, Deepika, Y.R. Lim, I.W. Nah, K.-R. Lee, L.A. Archer, W.I. Cho, *"Langmuir-Blodgett artificial solid-electrolyte interphases for practical lithium metal batteries",* Nature Energy 3, 889-898 (2018) – Hero image cover.

- **M.S. Kim**, M.-S. Kim, V. Do, Y.R. Lim, I.W. Nah, L.A. Archer, W.I. Cho, *"Designing solid-electrolyte interphases for lithium sulfur electrodes using ionic shields",* Nano Energy 41, 573-582 (2017).

- **M.S. Kim**, L. Ma, S. Choudhury, L.A. Archer, *"Multifunctional Separator Coatings for High Performance Lithium sulfur Batteries",* Advanced Materials Interfaces 3(22), 1600450 (2016) – Front cover.

- **M.S. Kim**, L. Ma, S. Choudhury, S. Wei, L.A. Archer, *"Fabricating multifunctional nanoparticle membranes by a fast layer-by-layer Langmuir-Blodgett process: application in lithium-sulfur Batteries",* Journal of Materials Chemistry A 4, 14709-14719 (2016).

- **M.S. Kim**, B. Hsia, C. Carraro, R. Maboudian, *"Flexible micro-supercapacitors with high energy density from simple transfer of photoresist-derived carbon electrodes",* Carbon 74, 163-169 (2014).

- B. Hsia†, **M.S. Kim**†, L.E Luna†, N.R Mair, Y. Kim, C. Carraro, R. Maboudian, *"Templated 3D CVD ultrathin graphite networks with controllable geometry: synthesis and application as supercapacitor electrodes"*, ACS Applied Materials & Interfaces 6, 18413-18417 (2014).

- S. T. Oyakhire, S.-L. Liao, S. B. Shuchi, **M.S. Kim**, S.C. Kim, Z. Yu, R. A. Vila, P. E. Rudnicki, Y. Cui, S. F. Bent, "*Proximity Matters: Interfacial Solvation Dictates Solid Electrolyte Interphase Composition*", Nano Letters, (2023).

- S.C. Kim, J. Wang, R. Xu, P. Zhang, Y. Chen, Z. Huang, Y. Yang, Z. Yu, S. T. Oyakhire, W. Zhang, L. Greenburg, **M.S. Kim**, D. T. Boyle, P. Sayavong, Y. Ye, J. Qin, Z. Bao, Y. Cui, "*High Entropy Electrolytes for Practical Lithium Metal Batteries*", Nature Energy (2023).

- P. Sayavong, W. Zhang, S. T. Oyakhire, D. T. Boyle, Y. Chen, S.C. Kim, R. A. Vila, S. E. Holmes, **M.S. Kim**, S. F. Bent, Z. Bao, Y. Cui, "*Dissolution of the Solid Electrolyte Interphase and Its Effects on Lithium Metal Anode Cyclability*", JACS 145(22), 12342-12350 (2023).

- S.C. Kim, S. T. Oyakhire, C. Athanitis, J. Wang, Z. Zhang, W. Zhang, D. T. Noyle, **M.S. Kim**, Z. Yu, X. Gao, T. Sogade, E. Wu, J. Qin, Z. Bao, S. F. Bent, Y. Cui, "*Data-driven electrolyte design for lithium metal anodes*", PNAS 120(10), e2214357120 (2023).

- S. T. Oyakhire, W. Zhang, Z. Yu, S. E. Holmes, P. Sayavong, S.C. Kim, D. T. Boyle, **M.S. Kim**, Z. Zhang, Y. Cui, S. F. Bent, "*Correlating the formation protocols of solid electrolyte interphases with practical performance metrics in lithium metal batteries*", ACS Energy Letters 8, 869-877 (2023).

- D. T. Boyle, Y. Li, A. Pei, R. A. Vila, Z. Zhang, P. Sayavong, **M.S. Kim**, W. Huang, H. Wang, Y. Liu, R. Xu, R. Sinclair, J. Qin, Z. Bao, Y. Cui, "*Resolving Current-Dependent Regimes of Electroplating Mechanisms for Fast Charging Lithium Metal Anodes*", Nano Letters 22(20), 8224-8232 (2022).

- Z. Yu, P. Rudnicki, Z. Zhang, Z. Huang, H. Celik, S. T. Oyakhire, Y. Chen, X. Kong, S.C. Kim, X. Xiao, H. Wang, Y. Zheng, G. Kamat, **M.S. Kim**, S. F. Bent, J. Qin, Y. Cui, Z. Bao, "*Rational solvent molecule tuning for high-performance lithium metal battery electrolytes*", Nature Energy 7, 94-106 (2022).

- J. Zheng, **M.S. Kim**, Z. Tu, S. Choudhury, T. Tang, L.A. Archer, "*Regulating electrodeposition morphology of lithium: towards commercially relevant secondary Li metal batteries*", Chemical Society Reviews 49(9), 2701-2750 (2020).

- V. Do, Deepika, **M.S. Kim**, M.-S. Kim, K.-R. Lee, W.I. Cho, *"Carbon Nitride Phosphorus as an Effective Lithium Polysulfide Adsorbent for Lithium-Sulfur Batteries"*, ACS Applied Materials & Interfaces 11(12), 11431-11441 (2019).

- M.-S. Kim, **M.S. Kim**, V. Do, Y. Xia, W. Kim, W.I. Cho, "*Facile and scalable fabrication of high-energy-density sulfur cathodes for pragmatic lithium-sulfur batteries*", Journal of Power Sources 422, 104-112 (2019).

- K.M. Kwon, I.G. Kim, K.Y. Lee, H. Kim, **M.S. Kim**, W.I. Cho, J. Choi, I.W. Nah, *"α-Fe2O3 anchored on porous N doped carbon derived from green microalgae via spray pyrolysis as anode materials for lithium ion batteries",* Journal of Industrial Engineering Chemistry 69, 39-47 (2019).

- L. Ma, **M.S. Kim**, L.A. Archer, *"Stable artificial solid electrolyte interphases for lithium batteries",* Chemistry of Materials 29(10), 4181-4189 (2017).

- L. Ma, H. Zhuang, S. Wei, K. Hendrickson, **M.S. Kim**, R.G. Hennig, L.A. Archer, *"Enhanced Li-S batteries using Amine-functionalized CNT in the Cathode: Electrochemistry and Kinetics of Polysulfide Dissolution",* ACS Nano 10(1), 1050-9 (2015).

- B. Hsia, **M.S. Kim**, C. Carraro, R. Maboudian, *"Cycling characteristics of high energy density, electrochemically activated porous-carbon supercapacitor electrodes in aqueous electrolytes",* Journal of Material Chemistry A 1, 10518-10523 (2013).

- B. Hsia, **M.S. Kim**, M. Vincent, C. Carraro, R. Maboudian, *"Photoresist-derived porous carbon for on-chip micro-supercapacitors",* Carbon 57, 395-400 (2013).

- J.P Alper, **M.S. Kim**, M. Vincent, B. Hsia, V. Radmilovic, C. Carraro, R. Maboudian, *"Silicon carbide nanowires as highly robust electrodes for micro-supercapacitors",* Journal of Power Sources 230, 298-302 (2013).

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Peer-Reviewed Conference Papers

- **M.S. Kim**, B. Hsia, C. Carraro, R. Maboudian, *"Flexible micro-supercapacitors from photoresist-derived carbon electrodes on flexible substrates"*, The 27th International Conference (IEEE MEMS 2014, San Francisco, USA), 389-392 (2014).

- B. Hsia, S. Wang, **M.S. Kim**, C. Carraro, R. Maboudian, *"All solid-state micro-supercapacitors using ionogel electrolyte"*, The 17th International Conference (TRANSDUCERS 2013, Barcelona, Spain), 1328-1331 (2013).

- M. Vincent, **M.S. Kim**, C. Carraro, R. Maboudian, *"Silicon carbide nanowires as an electrode material for high-temperature supercapacitor"*, The 25th International Conference (IEEE MEMS 2012, Paris, France), 39-42 (2012).

- B. Hsia, M. Vincent, **M.S. Kim**, C. Carraro, R. Maboudian, *"Photoresist-derived porous carbon for integrated on-chip energy storage"*, 2012 Hilton Head Solid-State Sensors, Actuators and Microsystems Workshop, 254-255 (2012).

JOURNAL REVIEWER

- *Science Advances, Advanced Materials, Advanced Energy Materials, ACS Nano, Advanced Materials Interfaces, Materials Today Energy, Small, ACS Applied Materials & Interfaces, Science Bulletin, Journal of The Electrochemical Society, and Carbon*

AWARD & RECOGNITION

- **IOP Trusted Reviewer Award**, *Demonstrating a high level of peer review competence, with the ability to critique scientific literature to an excellent standard*, Institute of Physics (IOP) (2023)

- **KIST Award**, *The highest award of KIST given to the best employee who has provided the most creative and innovative contribution to KIST's development*, Korea Institute of Science and Technology (2018)

- **John M. Prausnitz Award for Outstanding Undergraduate Research in Chemical and Biomolecular Engineering**, *Highest graduation award for the one distinguished undergraduate*, Department of Chemical & Biomolecular Engineering at UC Berkeley (2014)

- **Dean's honor list of 2013**, *Recognition from College of Chemistry Dean for outstanding academic performance*, Department of Chemical & Biomolecular Engineering at UC Berkeley (2013)

- **College of Chemistry Undergraduate Research Stipend Winner**, *Research stipend grant from College of Chemistry Department to highly selective undergraduate researchers*, Department of Chemical & Biomolecular Engineering at UC Berkeley (2013)

- **Green Chemistry Competition third-prize winner**, *Proposing most innovative ideas on Green Chemistry with $3,000 award*, Big Ideas at Berkeley (2011)

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Web: www.munsekkim.com
Email: rlantj@stanford.edu

PATENTS

US PATENTS

- Artificial solid electrolyte interphase of metallic anode for secondary battery including amino-functionalized carbon structures to protect anode material, method for producing anode and lithium metal secondary battery including anode produced by the method
  Mun Sek Kim, Won Il Cho, Seung Hun Lee, Min-Seop Kim, Van Dung Do, In Wook Nah, In-Hwan Oh
  US 20190280304A1 & 2021-02-16

- Anode for lithium metal secondary battery including Mxene thin film, method for producing the anode and lithium metal secondary battery including the anode
  Mun Sek Kim, Won Il Cho, Ji-Hyun Ryu, Seung Hun Lee
  US 20190267630A1 & 2021-02-16

- Aqueous binder for lithium-sulfur secondary battery, preparation method thereof and lithium-sulfur secondary battery comprising the same
  Won Il Cho, Vandung Do, **Mun Sek Kim**, In Wook Nah, Min-Seop Kim
  US 20200119355A1 & 2020-11-17

- Electrolyte system for lithium metal secondary battery and lithium metal secondary battery including the same
  Mun Sek Kim, Won Il Cho, Ji-Hyun Ryu, In Wook Nah, Min-Seop Kim, Sun Min Park
  US20180331393A1 & 2020-10-13

- Polyethyleneimine-attached carbonaceous material and separator for lithium-sulfur battery coated with the same
  Mun Sek Kim, Won Il Cho, In Wook Nah, Young Rok Lim, Sun Min Park, In-Hwan Oh
  US 20180269453A1 & 2020-07-28

- Functionalized metal oxide nanoparticles and lithium anode for lithium-sulfur battery including the same
  Mun Sek Kim, Won Il Cho, In Wook Nah, In-Hwan Oh, Vandung Do
  US20180241042A1 & 2020-05-19

- Lithium metal anode comprising Langmuir-Blodgett films as an artificial solid electrolyte interface layer, lithium metal battery comprising the same, and preparation method thereof
  Mun Sek Kim, Won Il Cho, In Wook Nah, Min Seop Kim, Lynden A. Archer, Snehashis Choudhury, Zhengyuan Tu
  US20180123114A1 & 2019-03-26

- Organized nanoparticulate and microparticulate coatings and methods of making and using same
  Mun Sek Kim, Snehashis Choudhury, Lin Ma, Lynden A. Archer
  US20180309109A1 & 2018-10-25
  KR20180113505A & 2018-10-16
  CN108602017A & 2018-09-28
  WO2017100758A1 & 2017-06-15

Mun Sek Kim

Web: www.munsekkim.com
Email: rlantj@stanford.edu

KR PATENTS

- Lithium-based hybrid anode material, preparation method thereof and lithium metal battery comprising the same
  Mun Sek Kim, 조원일, 이승훈, 류지현, 나인욱
  KR 102200268 & 2021-01-04

- Aqueous binder for lithium sulfur secondary battery, preparation method thereof and lithium sulfur secondary battery comprising the same
  조원일, 도반중, **Mun Sek Kim**, 나인욱, 김민섭
  KR 102152982 & 2020-09-01

- Artificial solid electrolyte interphase for protecting anode of rechargeable battery, preparation method thereof and lithium metal battery comprising the same
  Mun Sek Kim, 조원일, 이승훈, 류지현, 나인욱
  KR 102118023 & 2020-05-27

- Coating composition for separator of secondary battery comprising p-doped graphitic carbon nitride, preparation method thereof and li-s battery comprising the same
  조원일, 도반중, **Mun Sek Kim**, 김민섭, 나인욱
  KR 102113222 & 2020-05-14

- Electrolyte system and lithium metal battery comprising the same
  Mun Sek Kim, 조원일, 류지현, 나인욱, 김민섭, 박선민
  KR 102099387 & 2020-04-03

- Anode formed solid electrolyte interphase protective layer comprising graphene nanoparticle and lithium metal battery comprising the same
  Mun Sek Kim, 조원일, 나인욱, 도반중, 김민섭, 류지현, 박선민
  KR 102059104 & 2019-12-18

- Interlayer for protecting anode of rechargeable battery, preparation method thereof and lithium metal battery comprising the same
  Mun Sek Kim, 조원일, 김민섭, 박선민, 도반중, 류지현
  KR 102069284 & 2020-01-16

- Solid electrolyte interphase comprising amino functionalized reduced graphene oxide thin film for protecting anode of rechargeable battery, preparation method thereof and lithium metal battery comprising the same
  Mun Sek Kim, 조원일, 나인욱, 오인환, 이승훈
  KR 101972034 & 2019-04-18
- Solid electrolyte interphase comprising amino functionalized multi-walled carbon nanotube for protecting anode of rechargeable battery, preparation method thereof and lithium metal battery comprising the same
  Mun Sek Kim, 조원일, 이승훈, 김민섭, 도반중
  KR 102035778 & 2019-10-17

- Anode for lithium metal battery comprising Nb_2C thin film, preparation method thereof and lithium metal battery comprising the same
  Mun Sek Kim, 조원일, 류지현, 이승훈
  KR 102100849 & 2020-04-08

- Anode for lithium metal battery comprising Ti_2C thin film, preparation method thereof and lithium metal battery comprising the same
  Mun Sek Kim, 조원일, 류지현, 이승훈
  KR 102100854 & 2020-04-08

- Anode for lithium metal battery comprising Ti_3C_2 thin film, preparation method thereof and lithium metal battery comprising the same
  Mun Sek Kim, 조원일, 류지현, 이승훈, 박선민
  KR 102100876 & 2020-04-08

Mun Sek Kim

Web: www.munsekkim.com
Email: rlantj@stanford.edu

- Phosphorus doped and phosphate functionalized reduced graphene oxide artificial solid electrolyte interphase and anode for lithium metal battery comprising the same
  Mun Sek Kim, 조원일, 나인욱, 류지현, 김민섭, 박선민
  KR 102046554 & 2019-11-13

- Nitrogen doped reduced graphene oxide artificial solid electrolyte interphase and anode for lithium metal battery comprising the same
  Mun Sek Kim, 조원일, 나인욱, 류지현, 박선민, 김민섭
  KR 102046547 & 2019-11-13

- Electrolyte additive salts system and lithium metal battery comprising the same
  Mun Sek Kim, 조원일, 류지현, 이승훈, 이경원
  KR 102063821 & 2020-01-02

- Electrolyte additive solvents system and lithium metal battery comprising the same
  Mun Sek Kim, 조원일, 류지현, 이승훈
  KR 102046538 & 2019-11-13

- Cathode for lithium-sulfur battery with polyethyleneimine and manganese dioxide, and lithium-sulfur battery comprising the same
  Mun Sek Kim, 조원일, 도반중, 이승훈, 장병익, 김민섭, 나인욱
  KR 101930395 & 2018-12-12

- Separator with sandwiched configuration for secondary battery, method for fabricating the same, and secondary battery comprising the same
  Mun Sek Kim, 조원일, 나인, 김민섭, 박선민, 장병익, 이승훈
  KR 101993277 & 2019-06-20

- Electrolyte systems and lithium metal battery comprising the same
  Mun Sek Kim, 조원일, 류지현, 나인욱, 김민섭, 박선민
  KR 102063821 & 2020-01-02

- Polyethyleneimine-attached carbonaceous material and separator for lithium-sulfur battery coated with the same
  Mun Sek Kim, 조원일, 나인욱, 임영록, 박선민, 오인환
  KR 101997074 & 2019-07-01

- Functionalized metal oxide nanoparticles and lithium anode for lithium-sulfur battery including the same
  Mun Sek Kim, 조원일, 나인욱, 오인환, 도반중
  KR 101897206 & 2018-09-04

- Lithium metal anode comprising langmuir-blodgett layer, battery comprising the same, and preparation method thereof
  Mun Sek Kim, 조원일, 나인욱, 김민섭, Lynden A. Archer
  KR 101913338 & 2018-10-24

Mun Sek Kim

Web: www.munsekkim.com
Email: rlantj@stanford.edu

MEDIA

- **ElectimesNews**, 02/07/2023, https://www.electimes.com/news/articleView.html?idxno=315128
- **Weixinqq**, 01/29/2023, https://mp.weixin.qq.com/s/RwNBqqNEfaBaVTjrp8fLLg
- **Newmediamax**, 01/28/2023, https://www.newmediamax.com.tw/article/1ini5zjkirayf.html#gsc.tab=0
- **Weixinqq**, 01/27/2023, https://mp.weixin.qq.com/s/J3s57YFjXq3HrAFrgXwk1
- **NaturePortfolioCommunity**, 02/22/2022, https://engineeringcommunity.nature.com/posts/the-suspension-electrolyte-design-a-versatile-platform-for-electrolyte-development-of-lithium-metal-batteries
- **ElectimesNews**, 01/18/2022, http://www.electimes.com/news/articleView.html?idxno=227993
- **Cailiaoniu**, 01/18/2022, http://www.cailiaoniu.com/232268.html
- **MINEWS**, 01/18/2022, https://min.news/en/tech/ec17d1e584440af05839159307149a63.html
- **iNEWS**, 01/18/2022, https://inf.news/en/science/17ab37f94401b3fc0b3b17509f39ce9b.html
- **MINEWS**, 01/18/2022, https://min.news/en/tech/4c10be26d32118d256361ec0327abffc.html
- **SciencenetNews**, 01/18/2022, https://news.sciencenet.cn/htmlpaper/2022/1/20221188151039469428.shtm
- **Energist**, 01/18/2022, https://nyxr-home.com/71479.html
- **SohuNews**, 01/18/2022, http://news.sohu.com/a/517377726_121118996
- **SHKP**, 01/18/2022, https://www.shkp.org.cn/articles/2022/01/wx362590.html
- **Sina**, 01/18/2022, http://k.sina.com.cn/article_5572529792_14c260e80019010j1u.html
- **NetEase**, 01/18/2022, https://www.163.com/dy/article/GU00KERV05329TW8.html
- **Baijiahao**, 01/18/2022, https://baijiahao.baidu.com/s?id=1722258330348554246&wfr=spider&for=pcq
- **ZhuanlanZhihu**, 01/18/2022, https://zhuanlan.zhihu.com/p/458949463
- **Weixinqq**, 01/18/2022, https://mp.weixin.qq.com/s/_o3UUU1gt1Tf3aWHYg1yJg
- **qq**, 01/18/2022, https://new.qq.com/omn/20220118/20220118A01AJD00.html
- **iikx**, 01/18/2022, https://www.iikx.com/news/progress/17204.html
- **ITBizNews**, 11/18/2019, http://www.itbiznews.com/news/articleView.html?idxno=12078
- **NewsWorks**, 11/17/2019, http://www.newsworks.co.kr/news/articleView.html?idxno=411297
- **HelloDD News Korea**, 11/17/2019, https://www.hellodd.com/news/articleView.html?idxno=70323
- **Business Wire**, 11/12/2018, https://www.businesswire.com/news/home/20181112005008/en/KIST-Enhancing-Flight-Duration-Time-Drones-Lithium
- **Digital Journal**, 11/12/2018, https://www.bizjournals.com/businesswire/press_releases/2018/11/12/20181112005008
- **Sys-con Media News**, 11/12/2018, http://www.sys-con.com/node/4344492
- **Equities News**, 11/12/2018, https://www.equities.com/news/kist-enhancing-flight-duration-time-of-drones-with-lithium-metal-ion-batteries
- **TMC News**, 11/12/2018, https://www.tmcnet.com/usubmit/-kist-enhancing-flight-duration-time-drones-with-lithium-/2018/11/12/8850086.htm
- **HelloDD News Korea**, 10/25/2018, http://www.hellodd.com/?mt=view&pid=66463
- **MT News Korea**, 10/25/2018, http://www.mtnews.net/news/view.php?idx=4639
- **Seoul Economic Network News Korea**, 10/25/2018, http://www.sedaily.com/NewsView/1S61UEJLTV
- **EDaily News Korea**, 10/25/2018, http://www.edaily.co.kr/news/read?newsId=03850726619376528&mediaCodeNo=257&OutLnkChk=Y
- **ETimes News Korea**, 10/25/2018, http://www.etimes.net/service/etimes_2011/ShellView.asp?ArticleID=2018102514262201880
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Mun Sek Kim

Web: www.munsekkim.com
Email: rlantj@stanford.edu

SKILLS

Characterization

- Electrode resistivity, ^{7}Li & ^{19}F NMR, Potentiostat Li^{+} solvation energy measurement, Density functional theory computation, Molecular dynamic simulation, Cyclic voltammetry, Modified Aurbach's Coulombic efficiency, Potentiostat for various electrochemical measurements, AC Impedance spectroscopy, SEM & TEM, FIB with ion, beam milling, Four-point probe station, e-beam evaporator, Raman spectroscopy, Ultraviolet lithography, Atomic force microscopy, Contact angle goniometer, Brunauer-Emmett-Teller porosimeter, Dielectric spectroscopy, Thermogravimetric analysis, Energy dispersive X-ray spectroscopy, X-Ray Diffractometer, X-ray photoelectron spectroscopy, Inductively Coupled Plasma Atomic Emission Spectroscopy, Langmuir-Blodgett trough

Material Synthesis & Method

- Suspension electrolytes, porous carbon film, Carbonaceous and ceramic thin films via wet or dry process, Langmuir-Blodgett films, Nanowires, Flexible films, Graphenes, Graphene nanoparticles, Functionalized graphenes, Functionalized metal-oxides, Doped nano-carbon, Mxenes
- Langmuir-Blodgett Scooping, Low pressure and atmospheric pressure chemical & physical vapor deposition, Spin coating, Air-spray coating, Sulfonation & amino functionalization via wet method, Pyrolysis, Spray pyrolysis, Double thin film transfer, Nanostructured electroplating

Software

- HIOKI RM2610, Maccor, Arbin, Land, Matlab, Adobe Illustrator, Igor pro, Mendeley, Cinema 4D, Autodesk Fusion 360, Simplify 3D, Abaqus 6.7-1, LabView, Polymath, Multisim, Advanced Excel, Adobe Photoshop

Languages

- Bilingual in English and Korean

ACTIVITIES

2016 - 2019 **Agape Youth Group,** ***Alter server***
- Roman Catholic fellowship for young Catholics

2014 - 2016 **CCCC, Cornell University,** ***Member***
- Roman Catholic fellowship for Korean and Korean-American students that strive to build a community of support in strengthening their faith in God

2012 - 2014 **Sigma Alpha Lambda, UC Berkeley,** ***National Member***
- Promotes academic excellence and leadership

2011 - 2014 **American Institute of Chemical Engineers (AIChE), UC Berkeley,** ***National Member***
- National organization that serves to foster excellence in chemical engineering education and global practice, and to create networking opportunities with professional members in the industry and academia

2010 - 2014 **Chun Jin Am, UC Berkeley,** ***Planning Committee Member***
- Roman Catholic fellowship for Korean and Korean-American students that strive to build a community of support in strengthening their faith in God

PERSONAL

Interests: Batteries, Battery Technologies, Energy Storage Systems, Energy Materials, Entrepreneurships
Hobbies**:** Weightlifting, Tennis, Golf