

# Mun Sek Kim

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## EDUCATION

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09/2019 – Present	<b>Stanford University</b> Doctor of Philosophy (PhD) in Chemical Engineering	<b>California, USA</b>
08/2014 – 05/2016	<b>Cornell University</b> Master of Science (MS) in Chemical and Biomolecular Engineering	<b>New York, USA</b>
08/2010 – 05/2014	<b>University of California, Berkeley</b> Bachelor of Science (BS) in Chemical & Biomolecular Engineering	<b>California, USA</b>

## EXPERIENCE

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01/2020 – Present	<b>Nanomaterials Science and Engineering Lab with Professor Yi Cui</b> <b>Stanford University</b> <i>Graduate Student Researcher</i> (Advisor/Dissertation committees: Yi Cui, Zhenan Bao, and Jian Qin) <ul style="list-style-type: none"><li>• Revealing features of the solid-electrolyte interphase components for Li metal anode</li><li>• Developing inorganic suspension electrolytes for Li metal batteries</li></ul>	
06/2022 – 08/2022	<b>Cell E-Chem design engineer</b> <b>Rivian automaker company</b> <i>Summer intern</i> <ul style="list-style-type: none"><li>• Developed battery electrode evaluation and material screening protocols</li><li>• Electrochemical analyses on the battery electrodes and electrolytes</li></ul>	
07/2016 – 07/2019	<b>Center for Energy Storage Research</b> <b>Korea Institute of Science and Technology</b> <i>Research Scientist</i> (In lieu of military service) <ul style="list-style-type: none"><li>• Designed artificial solid-electrolyte interphases for lithium batteries</li><li>• Developed Langmuir-Blodgett artificial solid-electrolyte interphase for metallic lithium anode</li><li>• Optimized electrolyte formulations to derive robust solid-electrolyte interphases for lithium battery electrodes</li></ul>	
08/2014 – 06/2016	<b>Electrochemical Energy Storage Laboratory with Professor Lynden A. Archer</b> <b>Cornell University</b> <i>Graduate Student Researcher</i> (Advisor: Lynden A. Archer) <ul style="list-style-type: none"><li>• Developed Langmuir-Blodgett Scooping (layer-by-layer, large-scale, nanoparticulate, binder-free, and multicomponent) coating techniques for battery technologies</li><li>• Developed separator modification strategies with diverse coating configurations and materials designed for high performance lithium sulfur batteries</li><li>• Developed an interfacial engineering for battery electrodes</li><li>• Developed chemical functionalization routes for battery materials</li></ul>	
05/2011 – 05/2014	<b>Applied Materials &amp; Surface Science Laboratory with Professor Roya Maboudian</b> <b>University of California, Berkeley</b> <i>Undergraduate Student Researcher</i> (Advisor: Roya Maboudian) <ul style="list-style-type: none"><li>• Developed a thin film transfer technique for flexible micro-supercapacitor electrodes</li><li>• Fabricated bicontinuous 3D graphene networks with controllable geometry for the micro-supercapacitor electrodes</li><li>• Developed a pyrolysis technique for photoresist-derived porous carbon electrodes for on-chip micro-supercapacitors</li><li>• Fabricated silicon carbide nanowires for high-voltage materials for the micro-supercapacitor electrodes</li><li>• Fabricated electrochemically activated porous carbon film for high energy density pseudocapacitive micro-supercapacitor electrodes</li></ul>	
12/2012 – 01/2013	<b>Korea Electrotechnology Research Institute</b> <i>Internship</i> <ul style="list-style-type: none"><li>• Fabricated electrocardiography (ECG) device with a patented piezoresistive pressure sensor</li><li>• Optimized polydimethylsiloxane (PDMS) thicknesses for the pressure sensor <i>via</i> simulation using Abaqus</li><li>• Calibrated the pressure sensor based on the surrounding and contact temperatures <i>via</i> Lab View</li></ul>	

**PUBLICATIONS**

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**Peer-Reviewed Research Papers****FIRST-AUTHOR**

- **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  $\text{Li}_3\text{N}$  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  $\text{Li}^+$  solvation environment for lithium metal batteries”, *Nature Materials* 21, 445-454 (2022).
- S. Lee<sup>†</sup>, **M.S. Kim**<sup>†</sup>, J.-H. Lee, J.-H. Ryu, V. Do, B.G. Lee, W. Kim, W.I. Cho, “Li-In alloy anode and  $\text{Nb}_2\text{CTx}_2$  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<sup>†</sup>, **M.S. Kim**<sup>†</sup>, L.E Luna<sup>†</sup>, 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).

**SECOND-AUTHOR**

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

## CO-AUTHOR

- 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).
- 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).
- K.M. Kwon, I.G. Kim, K.Y. Lee, H. Kim, **M.S. Kim**, W.I. Cho, J. Choi, I.W. Nah, “ $\alpha$ -Fe<sub>2</sub>O<sub>3</sub> 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, 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).

## 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 27<sup>th</sup> 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 17<sup>th</sup> 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 25<sup>th</sup> 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

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- *Science Advances, Advanced Materials, Advanced Energy Materials, ACS Nano, Advanced Materials Interfaces, Materials Today Energy, Small, ACS Applied Materials & Interfaces, Science Bulletin, and Carbon*

## AWARD & RECOGNITION

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- **KIST Award**, 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 the 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)

## PATENTS

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### 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

## 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<sub>2</sub>C 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<sub>2</sub>C 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<sub>3</sub>C<sub>2</sub> thin film, preparation method thereof and lithium metal battery comprising the same  
**Mun Sek Kim**, 조원일, 류지현, 이승훈, 박선민  
[KR 102100876](#) & 2020-04-08
- 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

# Mun Sek Kim

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- 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



## MEDIA

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- **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](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](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](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](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>
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# Mun Sek Kim

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## SKILLS

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### **Characterization**

- Electrode resistivity,  $^7\text{Li}$  &  $^{19}\text{F}$  NMR, Potentiostat  $\text{Li}^+$  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

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- 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

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**Interests:** Batteries, Battery Technologies, Energy Storage Systems, Energy Materials, Entrepreneurships

**Hobbies:** Weight-lifting, Tennis, Golf