



Minah Lee, Ph.D

Senior Research Scientist
Center for Energy Storage Research
Korea Institute of Science & Technology (KIST)
E-mail : minahlee@kist.re.kr
Homepage : <https://www.mleelab.com/>

Hwarang-ro 14gil 5
KIST L5347B
Seongbuk-gu, Seoul, 02792
Phone: 02-958-5297

Education

- Ph.D. Materials Science and Engineering, KAIST** (advisor: Prof. Chan Beum Park) Daejeon, Korea
Thesis: "Design of Materials for Bio-Inspired Energy Conversion and Storage" 03/2011 ~ 02/2015
- M.S. Materials Science and Engineering, KAIST** (advisor: Prof. Chan Beum Park) Daejeon, Korea
Thesis: "Development of Light-Harvesting Synthetic Woods for Artificial Photosynthesis" 03/2009 ~ 02/2011
- B.S. Materials Science and Engineering, KAIST** Daejeon, Korea
03/2005 ~ 03/2009

Experience

- Korea Institute of Science & Technology (KIST)** Seoul, Korea
- Senior Research Scientist 03/2019 ~ present
- Stanford University, Chemical Engineering, Bao Research Group** CA, USA
- Postdoctoral Fellow (advisor: Prof. Zhenan Bao, co-advisor: Prof. Yi Cui) 11/2015 ~ 12/2018
- KAIST, Materials Science & Engineering, Advanced Biomaterials Lab** Daejeon, Korea
- Postdoctoral Fellow (advisor: Prof. Chan Beum Park) 03/2015 ~ 10/2015
- Graduate Student (advisor: Prof. Chan Beum Park) 03/2009 ~ 02/2015

Honors and Awards

- *Park Su-Moon Academic Award*, The Korean Electrochemical Society, 2019
- *Wiley APAC Young Researcher Award*, Wiley, 2019
- *MRS Postdoc Award*, Materials Research Society, 2018
- *Postdoctoral Fellowship*, National Research Foundation of Korea, 2017-2018
- *Global Ph.D. Fellowship*, National Research Foundation of Korea, 2011-2014
- *National Research Fellowship for Graduates*, NRF of Korea, 2009-2011
- *Best Doctoral Thesis Award*, KAIST, 2015
- *ECS Student Award*, Korea Section, The Electrochemical Society, 2015
- *Grand Prize, Best Poster Award*, Nano Korea, 2014
- *Gold Medal*, Samsung Human Tech Thesis Prize, 2011

Publications (†Co-first authors, *Corresponding author)

➤ First authored

1. Y. Tsao[†], **M. Lee**[†], E. C. Miller, G. Gao, J. Park, S. Chen, T. Katsumata, H. Tran, L.-W. Wang, M. F. Toney, Y. Cui*, Z. Bao*, "Designing a quinone-based redox mediator to facilitate Li₂S oxidation in Li-S batteries." *Joule* 2019, 3, 872.
2. J. Park[†], **M. Lee**[†], D. Feng, Z. Huang, A. C. Hinckley, A. Yakovenko, X. Zou, Y. Cui, Z. Bao*, "Stabilization of hexaaminobenzene in a 2D conductive metal-organic framework for high power sodium storage."

Journal of the American Chemical Society 2018, 140, 10315.

3. **M. Lee**, J. Hong, J. Lopez, Y. Sun, D. Feng, K. Lim, W. C. Cheuh, M. F. Toney, Y. Cui*, Z. Bao*, “High-performance sodium–organic battery by realizing four-sodium storage in disodium rhodizonate” *Nature Energy* 2017, 2, 861. **Highlighted in Nature Energy News and Views & Stanford News**
4. **M. Lee**[†], J. Hong[†], B. Lee, S. Lee, C. B. Park*, K. Kang*, “Multi-electron redox phenazine for ready-to-charge organic batteries.” *Green Chemistry* 2017, 19, 2980. **2017 Green Chemistry Hot Articles**
5. **M. Lee**, J. U. Kim, K. J. Lee, S. Ahn, Y.-B. Shin*, J. Shin*, C. B. Park*, “Aluminum nanoarrays for plasmon-enhanced artificial photosynthesis.” *ACS Nano* 2015, 9, 6206.
6. J. Hong[†], **M. Lee**[†], B. Lee, D.-H. Seo, C. B. Park*, K. Kang*, “Biologically inspired pteridine redox centers for rechargeable batteries.” *Nature Communications* 2014, 5, 5335.
7. **M. Lee**[†], J. Hong[†], H.-D. Lim, S. B. Cho, K. Kang*, C. B. Park*, “Organic nanohybrid for fast and sustainable energy storage.” *Advanced Materials* 2014, 26, 2558.
8. **M. Lee**, J. U. Kim, J. S. Lee, B. I. Lee, J. Shin*, C. B. Park*, “Mussel-inspired plasmonic nanohybrids for light harvesting.” *Advanced Materials* 2014, 26, 4463.
9. **M. Lee**[†], J. Hong[†], D.-H. Seo, D. H. Nam, K. T. Nam, K. Kang*, C. B. Park*, “Redox cofactor from biological energy transduction as molecularly tunable energy-storage compound.” *Angewandte Chemie Int. Ed.* 2013, 52, 8322.
10. **M. Lee**, J. H. Kim, S. H. Lee, S. H. Lee, C. B. Park*, “Biomimetic artificial photosynthesis by light-harvesting synthetic woods.” *ChemSusChem* 2011, 4, 581.
11. **M. Lee**, S. H. Ku, J. Ryu, C. B. Park*, “Mussel-inspired functionalization of carbon nanotubes for biomimetic mineralization of hydroxyapatite.” *Journal of Materials Chemistry* 2010, 20, 8848.

➤ **Co-authored**

1. Z. Yu, D. G. Mackanic, W. Michaels, **M. Lee**, A. Pei, D. Feng, Q. Zhang, Y. Tsao, C. V. Amanchukwu, X. Yan, H. Wang, S. Chen, K. Liu, J. Kang, J. Qin, Y. Cui*, Z. Bao*, “A dynamic, electrolyte-blocking, and single-ion-conductive network for stable lithium-metal anodes.” *Joule* 2019, 3, 2761.
2. V. R. Feig, H. Tran, **M. Lee**, K. Liu, Z. Huang, L. Beker, D. G. Mackanic, Z. Bao*, “An electrochemical gelation method for patterning conductive PEDOT:PSS hydrogels.” *Advanced Materials* 2019, 31, 1902869.
3. J. Park, A. Hinckley, Z. Huang, D. Feng, A. Yakovenko, **M. Lee**, S. Chen, X. Zou, Z. Bao*, “Synthetic routes for a 2D semiconductive copper hexahydroxybenzene metal–organic framework.” *Journal of the American Chemical Society* 2018, 140, 14533.
4. J. Lopez, Y. Sun, D. G. Mackanic, **M. Lee**, A. M. Foudeh, M.-S. Song, Y. Cui*, Z. Bao*, “A dual-crosslinking design for resilient lithium ion conductor.” *Advanced Materials* 2018, 30, 1804142.
5. V. R. Feig, H. Tran, **M. Lee**, Z. Bao*, “Mechanically tunable, conductive interpenetrating network hydrogels that mimic the elastic moduli of biological tissue.” *Nature Communications* 2018, 9, 2740.
6. D. G. Mackanic, W. Michaels, **M. Lee**, D. Feng, J. Lopez, J. Qin, Y. Cui*, Z. Bao*, “Crosslinked

poly(tetrahydrofuran) as a loosely-coordinating polymer electrolyte." *Advanced Energy Materials*, 2018, 8, 1800703.

7. D. Feng[†], T. Lei[†], M. R. Lukatskaya[†], J. Park, Z. Huang, **M. Lee**, L. Shaw, S. Chen, A. A. Yakovenko, A. Kulkarni, J. Xiao, K. Fredrickson, J. B. Tok, X. Zou, Y. Cui*, Z. Bao*, "Robust and conductive two-dimensional metal-organic frameworks with exceptionally high volumetric and areal capacitance.", *Nature Energy* 2018, 3, 30.
8. D. S. Choi, Y. Ni, E. Fernandez-Fueyo, **M. Lee**, F. Hollmann, and C. B. Park*, "Photoelectroenzymatic oxyfunctionalization on flavin-hybridized carbon nanotube electrode platform.", *ACS Catalysis* 2017, 7, 1563.
9. H. D. Lim, B. Lee, Y. Zheng, J. Hong, J. Kim, H. Gwon, Y. Ko, **M. Lee**, K. Cho, K. Kang*, "Rational design of redox mediators for advanced Li-O₂ batteries.", *Nature Energy*, 2016, 1, 16066.
10. H. Kim, J. E. Kwon, B. J. Lee, J. Hong, **M. Lee**, S. Y. Park*, K. Kang*, "High energy organic cathode for sodium rechargeable batteries.", *Chemistry of Materials*, 2015, 27, 7258.
11. E. J. Sohn, J. S. Lee, **M. Lee**, K. H. Won*, C. B. Park*, "Self-adhesive graphene oxide-wrapped TiO₂ nanoparticles for UV-activated colorimetric oxygen detection." *Sensors and Actuators B: Chemical* 2015, 213, 322.
12. G. M. Ryu, **M. Lee**, D. S. Choi, C. B. Park*, "Hematite-based photoelectrochemical platform for visible light-induced biosensing." *Journal of Materials Chemistry C* 2015, 3, 4483.
13. J. H. Kim, **M. Lee**, C. B. Park*, "Polydopamine as a biomimetic electron gate for artificial photosynthesis." *Angewandte Chemie Int. Ed.* 2014, 126, 6482.
14. S. H. Ku, **M. Lee**, C. B. Park*, "Carbon-based nanomaterials for tissue engineering." *Advanced Healthcare Materials* 2013, 2, 244.
15. J. H. Kim, **M. Lee**, J. S. Lee, C. B. Park*, "Self-assembled light-harvesting peptide nanotubes for mimicking natural photosynthesis." *Angewandte Chemie Int. Ed.* 2012, 124, 532.
16. J. Hong, H.-D. Lim, **M. Lee**, S.-W. Kim, H. Kim, S.-T. Oh, G.-C. Chung, K. Kang*, "Critical role of oxygen evolved from layered Li-excess metal oxides in lithium rechargeable batteries." *Chemistry of Materials* 2012, 24, 2692.
17. J. H. Kim, S. H. Lee, J. S. Lee, **M. Lee**, C. B. Park*, "Zn-containing porphyrin as a biomimetic light-harvesting molecule for biocatalyzed artificial photosynthesis." *Chemical Communications* 2011, 47, 10227.
18. J. Ryu, S. H. Ku, **M. Lee**, C. B. Park*, "Bone-like peptide/hydroxyapatite nanocomposites assembled with multi-level hierarchical structure." *Soft Matter* 2011, 7, 7201.

Patents

1. **KR 10-1093202** "Photoluminescent peptide nanostructures and method thereof using self-assembly"
2. **KR 10-1317426** "Biomimetic light-harvesting synthetic woods for artificial photosynthesis"
3. **KR 10-1438047** "Self-assembled dipeptide/porphyrin nanotube and photocatalytic production method of oxidoreductase cofactors using the same"
4. **KR 10-1517870** "Electrode active material containing heterocyclic compound for lithium secondary battery, and lithium secondary battery containing the same"
5. **KR 10-1517864** "Nanohybrids of aromatic compound and carbon nanomaterials as electrodes for

secondary batteries and secondary batteries containing the same”

6. **KR 10-1539389** “Method for regenerating cofactors using polydopamine induced plasmonic nanohybrids”
7. **KR 10-1570504** “Self-adhesive photocatalyst films and method for preparing the same” **[licensed]**
8. **KR 10-1896259** “Secondary batteries based on a p-type diazabutadiene organic cathode material”
9. **US 62/542004** “Conductive metal organic framework for energy storage device”
10. **US 62/627458** “Rational design of redox mediator for fast and energy-efficient charging of sulfur cathodes”