



## Sang-Won Lee

Postdoctoral Scholar, Chemical Engineering

### Bio

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#### BIO

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#### STANFORD ADVISORS

- Thomas Jaramillo, Postdoctoral Faculty Sponsor
- Thomas Jaramillo, Postdoctoral Research Mentor

### Publications

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#### PUBLICATIONS

- **MoS<sub>2</sub> Degradation Dynamics under Simulated Diurnal (Photo)electrochemical H<sub>2</sub> Evolution Reaction Conditions.** *Journal of the American Chemical Society*  
Yap, K. M., Swathilakshmi, S., Lin, T., Aleman, A. M., Yan, K., Hannagan, R. T., Mule, A. S., Wang, C. Y., Lee, S. W., Zander, J., Qiu, J., Jaramillo, T. F., Nielander, et al  
2026
- **Bridging artificial intelligence with photovoltaics** *CELL REPORTS PHYSICAL SCIENCE*  
Lee, S., Lee, S., Lee, S., Hwang, J., Oh, W., Winther, K., Lee, D., Kim, D., Nielander, A. C., Jaramillo, T. F., Kang, Y., Lee, H.  
2025; 6 (11)
- **Diagnosing mechanisms to mitigate anion exchange ionomer degradation during impure water electrolysis** *ENERGY & ENVIRONMENTAL SCIENCE*  
Rios Amador, I., Hannagan, R. T., Qiang, A., Lee, S., Thi Thu Tran, N., Yap, K. M. K., Aleman, A. M., Marin, D. H., Mendoza, M., Stevens, M., Jaramillo, T. F., Nielander, A. C.  
2025
- **CO<sub>2</sub> Oxidative Ethane Dehydrogenation on CeO<sub>2</sub>/SiO<sub>2</sub>-Supported NiFe<sub>3</sub> Catalysts** *CHEMCATCHEM*  
Spurlock, R., Erdem, E., Lee, S., Chen, J., Gallo, A., Nielander, A. C., Jaramillo, T. F.  
2025
- **In Situ Neutron Reflectometry Reveals the Interfacial Microenvironment Driving Electrochemical Ammonia Synthesis.** *Journal of the American Chemical Society*  
Niemann, V. A., Doucet, M., Benedek, P., Deissler, N. H., Mygind, J. B., Lee, S. W., Rios Amador, I., Willoughby, W. L., Chorkendorff, I., Nielander, A. C., Tarpeh, W. A., Jaramillo, T. F.  
2025
- **Unassisted electrochemical H<sub>2</sub>O<sub>2</sub> production coupled to glycerol oxidation** *NATURE SYNTHESIS*  
Oh, D., Hwang, S., Kim, D., Matthews, J. E., Lee, J., Acosta, J., Lee, S., Xu, Y., Cho, A., Lee, D., Jaramillo, T. F., Seo, D., Jang, et al

2025

- **Temperature-dependent solid electrolyte interphase reactions drive performance in lithium-mediated nitrogen reduction to ammonia** *JOULE*  
Benedek, P., Cornejo-Carrillo, Y. E., O'Rafferty, A. H., Niemann, V. A., Lee, S., Mcshane, E. J., Cargnello, M., Niel, A. C., Jaramillo, T. F.  
2025; 9 (3)
- **Unraveling the effect of working pressure on the morphological, structural, optical, and compositional properties of PbI<sub>2</sub> thin films deposited by RF magnetron sputtering** *APPLIED SURFACE SCIENCE*  
Lee, W., Lee, S., Bae, S., Hwang, J., Kim, Y., Jeong, S., Hwang, J., Lee, S., Kim, D., Kang, Y., Lee, H.  
2025; 684
- **On-line Inductively Coupled Plasma Mass Spectrometry Reveals Material Degradation Dynamics of Au and Cu Catalysts during Electrochemical CO<sub>2</sub> Reduction.** *Journal of the American Chemical Society*  
Yan, K., Lee, S. W., Yap, K. M., Mule, A. S., Hannagan, R. T., Matthews, J. E., Kamat, G. A., Lee, D. U., Stevens, M. B., Nielander, A. C., Jaramillo, T. F.  
2025
- **Operando Surface-Enhanced Infrared Spectroscopy Connects Interfacial Dynamics with Reaction Kinetics During Electrochemical CO<sub>2</sub> Reduction on Copper** *ACS CATALYSIS*  
Matthews, J. E., Acosta, J., Lee, S., Oh, D., Lin, T. Y., Yap, K. M. K., Chen, J., Jang, J., Lee, D., Nielander, A. C., Jaramillo, T. F.  
2024
- **Homogeneously Mixed Cu-Co Bimetallic Catalyst Derived from Hydroxy Double Salt for Industrial-Level High-Rate Nitrate-to-Ammonia Electrosynthesis.** *Journal of the American Chemical Society*  
Jang, W., Oh, D., Lee, J., Kim, J., Matthews, J. E., Kim, H., Lee, S. W., Lee, S., Xu, Y., Yu, J. M., Hwang, S. W., Jaramillo, T. F., Jang, et al  
2024
- **CO<sub>2</sub> Conversion to Butene via a Tandem Photovoltaic-Electrochemical/Photothermocatalytic Process: A Co-design Approach to Coupled Microenvironments** *ACS ENERGY LETTERS*  
Yap, K. M. K., Aitbekova, A., Salazar, M., Kistler, T. A., Pabon, M., Su, M. P., Watkins, N. B., Lee, S., Agbo, P., Weber, A. Z., Peters, J. C., Agapie, T., Nielander, et al  
2024
- **Sub-volt conversion of activated biochar and water for H<sub>2</sub> production near equilibrium via biochar-assisted water electrolysis** *CELL REPORTS PHYSICAL SCIENCE*  
Kani, N. C., Chauhan, R., Olusegun, S. A., Sharan, I., Katiyar, A., House, D. W., Lee, S., Jairamsingh, A., Bhawnani, R. R., Choi, D., Nielander, A. C., Jaramillo, T. F., Lee, et al  
2024; 5 (6)
- **Titanium Silicide: A Promising Candidate of Recombination Layer for Perovskite/Tunnel Oxide Passivated Contact Silicon Two-Terminal Tandem Solar Cells.** *ACS applied materials & interfaces*  
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2024
- **Maximizing efficiency: Numerical modeling and optimization of 2-terminal perovskite/silicon tandem devices with different bottom cell structures** *SOLAR ENERGY*  
Song, H., Lee, S., Kang, Y., Kim, D., Lee, H.  
2024; 273
- **Bias-free solar NH<sub>3</sub> production by perovskite-based photocathode coupled to valorization of glycerol** *NATURE CATALYSIS*  
Tayyebi, A., Mehrotra, R., Al Mubarak, M., Kim, J., Zafari, M., Tayyebi, M., Oh, D., Lee, S., Matthews, J. E., Lee, S., Shin, T., Lee, G., Jaramillo, et al  
2024
- **Modeling diurnal and annual ethylene generation from solar-driven electrochemical CO<sub>2</sub> reduction devices** *ENERGY & ENVIRONMENTAL SCIENCE*  
Yap, K. M. K., Wei, W. J., Pabon, M., King, A. J., Bui, J. C., Wei, L., Lee, S., Weber, A. Z., Bell, A. T., Nielander, A. C., Jaramillo, T. F.  
2024
- **Controlling Mass Transport in Direct Carbon Dioxide Zero-Gap Electrolyzers via Cell Compression** *ACS SUSTAINABLE CHEMISTRY & ENGINEERING*  
Lee, D., Joensen, B., Jenny, J., Ehlinger, V. M., Lee, S., Abiose, K., Xu, Y., Sarkar, A., Lin, T. Y., Hahn, C., Jaramillo, T. F.

2023; 11 (46): 16661-16668

- **Potassium chloride passivation for sputtered SnO<sub>2</sub> to eliminate hysteresis and enhance the efficiency of perovskite solar cells** *JOURNAL OF ALLOYS AND COMPOUNDS*

Jeong, S., Hwang, J., Hwang, J., Lee, S., Lee, W., Lee, S., Pyun, D., Cho, S., Choe, Y., Lee, H., Kim, D., Kang, Y.

2023; 968

- **A framework for understanding efficient diurnal CO<sub>2</sub> reduction using Si and GaAs photocathodes** *CHEM CATALYSIS*

Yap, K. M. K., Lee, S., Steiner, M. A., Acosta, J., Kang, D., Kim, D., Warren, E. L., Nielander, A. C., Jaramillo, T. F.

2023; 3 (6)

- **Sputtered Pbl<sub>2</sub> with Post-Processing for Perovskite Solar Cells** *SOLAR RRL*

Hwang, J., Lee, S., Lee, W., Bae, S., Kang, D., Jeong, S., Lee, S., Pyun, D., Hwang, J., Cho, S., Kim, D., Kang, Y., Lee, et al

2023

- **First Demonstration of Top Contact-Free Perovskite/Silicon Two-Terminal Tandem Solar Cells for Overcoming the Current Density Hurdle** *ACS APPLIED ENERGY MATERIALS*

Pyun, D., Lee, S., Kim, Y., Jang, G., Choi, D., Jeong, S., Song, H., Lee, S., Cho, S., Kim, J., Kang, D., Lee, H., Hyun, et al

2023