



## Juyoung Oh

Postdoctoral Scholar, Mechanical Engineering

 Curriculum Vitae available Online

### Bio

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#### BIO

Juyoung Oh is a Postdoctoral Scholar at Stanford University. Her research focuses on understanding and harnessing thermal runaway phenomena in rechargeable batteries to enable controllable propulsion thrust. With a strong background in the thermochemical analysis of metal-based solid energetic materials, her work aims to elucidate the fundamental mechanisms governing thermal runaway in lithium-metal batteries, with particular emphasis on interfacial chemistry and thermodynamic behavior. Through this approach, she seeks to integrate battery and thruster functionalities into a unified system, advancing next-generation aerospace–battery technologies.

Prior to joining Stanford, Dr. Oh was a Postdoctoral Associate at Rice University. She received her Ph.D. in Aerospace Engineering from Seoul National University (SNU). Her academic achievements include the Best Doctoral Thesis Award (2022) and the Korean-American Women in Science and Engineering (KWISE) Young Scientist Scholarship (2025).

#### HONORS AND AWARDS

- Top 100 National Research and Development Excellence in 2020, Ministry of Science and ICT, South Korea (2020)
- Superior Presentation Winners, The Korean Society for Aeronautical & Space Sciences Fall Conference (2020)
- Best Presentation Paper Award, The Korean Society of Propulsion Engineers Fall Conference (2020)
- Aerospace Excellence Research Award Winners of Brain Korea, Seoul National University (2021)
- Outstanding Doctoral Dissertation Award, Korean Society of Combustion Fall Conference (2021)
- Best Paper Award Winners, Korean Society of Combustion Fall Conference (2021)
- Aerospace Excellence Research Award Winners of Brain Korea, Seoul National University (2022)
- Best Doctoral Thesis Award, Seoul National University (2023)
- Outstanding Doctoral Dissertation Award, Korean Society of Propulsion Engineers Fall Conference (2023)
- Korean-American Women in Science and Engineering (KWISE) Young Scientist Scholarship, Korean-American Women in Science and Engineering (KWISE) (2025)

#### BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- A Young Editorial Board Member (YEEM), the journal FirePhysChem (2025 - present)
- Committee Member, the Women in Combustion Advisory Committee (WiCAC) for Combustion Institute (2024 - 2026)

#### STANFORD ADVISORS

- Hai Wang, Postdoctoral Faculty Sponsor

## Research & Scholarship

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### RESEARCH INTERESTS

- Assessment, Testing and Measurement
- Leadership and Organization
- Research Methods
- Science Education
- Teachers and Teaching
- Technology and Education

### Publications

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#### PUBLICATIONS

- **External voltage driven linear burning rates for improving propulsion efficiency and control in space applications** *AEROSPACE SCIENCE AND TECHNOLOGY*  
Rajak, R., Lim, D., Oh, J., Gnanaprakash, K., Yoh, J. J.  
2025; 164
- **From micro-explosions to full-scale fire: Predicting thermal runaway in ultra-high nickel lithium-ion batteries with layering effect** *ENERGY*  
Mehrotra, A., Berwal, P., Oh, J., Lee, Y., Yoh, J. J.  
2025; 320
- **On the pyrolysis mechanism of Magnesium-Teflon-Viton (MTV) igniters subjected to seasonal aging** *FUEL*  
Oh, J., Jang, S., Yoh, J. J.  
2025; 389
- **Effect of hygrothermal aging on the pyrolysis of magnesium and its mixture** *FUEL*  
Lee, Y., Oh, J., Yoh, J. J.  
2025; 387
- **Exploration of altered reaction pathways in aging pyrotechnic compositions under seasonal cycles** *COMBUSTION AND FLAME*  
Oh, J., Yoh, J. J.  
2024; 269
- **Aging effects on Magnesium-Teflon-Viton related to magnesium hydroxide formation and the weakened bond of polytetrafluoroethylene** *JOURNAL OF THERMAL ANALYSIS AND CALORIMETRY*  
Lee, Y., Oh, J., Yoh, J. J.  
2024; 149 (5): 2189-2197
- **Thermal runaway aspect of ultrahigh-nickel cathode-based lithium-ion batteries at increasing charge states** *JOURNAL OF ENERGY STORAGE*  
Oh, J., Mehrotra, A., Lee, Y., Kim, B., Yoh, J. J.  
2024; 76
- **A predictive theory on thermal runaway of ultrahigh capacity lithium-ion batteries** *COMBUSTION AND FLAME*  
Padhi, U., Oh, J., Mehrotra, A., Lee, Y., Yoh, J. J.  
2023; 258
- **Understanding how metal oxidation and oxidizer decomposition affect the thermal degradation of aging pyrotechnic compositions** *COMBUSTION AND FLAME*  
Oh, J., Yoh, J. J.  
2023; 257
- **A real-time monitoring of pre-overcharge in high-nickel lithium ion batteries via plasma emission spectroscopy** *JOURNAL OF ENERGY STORAGE*

Yang, J., Lee, Y., Oh, J., Kim, B., Yoh, J. J.

2023; 72

- **On the oxidation kinetics of aging magnesium particles** *COMBUSTION AND FLAME*  
Oh, J., Lee, Y., Yoh, J. J.  
2023; 249
- **Understanding the reactivity of magnesium powder subjected to various aging conditions** *JOURNAL OF ENVIRONMENTAL CHEMICAL ENGINEERING*  
Lee, Y., Oh, J., Yoh, J. J.  
2022; 10 (5)
- **Observation of gunpowder-like thermochemical responses of a thermal energy storage system based on  $\text{KNO}_3/\text{NaNO}_3$ /Graphite exposed to a heat transfer fluid** *APPLIED THERMAL ENGINEERING*  
Oh, J., Jung, H., Yoh, J. J.  
2022; 207
- **Insights into aging mechanism of Ti-metal based pyrotechnics and changes in thermo-kinetic characteristics** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*  
Oh, J., Yoh, J. J.  
2021; 38 (3): 4441-4449
- **Critical changes in the ignition and combustion characteristics of aged titanium-based initiators** *COMBUSTION AND FLAME*  
Oh, J., Yoh, J. J.  
2020; 221: 74-85
- **Towards understanding the effects of heat and humidity on ageing of a NASA standard pyrotechnic igniter.** *Scientific reports*  
Oh, J., Jang, S. G., Yoh, J. J.  
2019; 9 (1): 10203
- **The hygrothermal aging effects of titanium hydride potassium perchlorate for pyrotechnic combustion** *THERMOCHIMICA ACTA*  
Oh, J., Ambekar, A., Yoh, J. J.  
2018; 665: 102-110