

Jong Hun Sung, Ph.D.

School of Mechanical & Aerospace Engineering

Nanyang Technological University

Singapore 639798, Singapore

E-mail: jonghun.sung@ntu.edu.sg

Cell Phone: +65 9039 0389



PERSONAL DATA

- Birth: 3rd May 1995, in Republic of Korea
- Family Status: Single

PROFESSIONAL EXPERIENCE

[Postdoctoral Researcher]

Nanyang Technological University

School of Mechanical & Aerospace Engineering

Jul. 2026 ~ Present

Singapore

[Postdoctoral Researcher]

Daegu Gyeongbuk Institute of Science & Technology (DIGST)

Division of Energy & Environmental Technology

Mar. 2026 ~ Jun. 2026

Daegu, Republic of Korea

EDUCATION

[Ph.D.]

Daegu Gyeongbuk Institute of Science & Technology (DIGST)

Department of Energy Science & Engineering

Advisor: Prof. Seung-Tae Hong and Jong-Sung Yur

Feb. 2021 ~ Feb. 2026

Daegu, Republic of Korea

[M.S.]

Pusan National University

Department of Chemistry

Advisor: Prof. Hyun Deog Yoo

Sep. 2018 ~ Aug. 2020

Busan, Republic of Korea

[B.S.]

Pukyong National University

Department of Industrial Chemistry

Mar. 2014 ~ Aug. 2018

Busan, Republic of Korea

RESEARCH INTEREST AND SKILL

- **Li Metal Anode**
 - ✓ Discovery of functional electrolyte
 - ✓ Electrolyte additive
 - ✓ Design host for metallic Li
 - ✓ Modification of Li metal surface
 - ✓ Interlayer between Li metal and all-solid-state electrolyte
- **Si Anode**
 - ✓ Modification of electrolyte solvation structure for Si-based anodes
 - ✓ Electrolyte additive
 - ✓ Synthesis of element-doped Si
 - ✓ Surface engineering of Si anode
 - ✓ Controlling porosity for Si particles
- **Cathode**
 - ✓ Surface modification of cathode active material
 - ✓ Assembly of coin- or pouch-type cell (mono- or multi-stacking)
 - ✓ Optimized cathode for all-solid-state Li batteries
- **Skill**
 - ✓ Electrode coating on current collector (mono- or double-layered coating)
 - ✓ Elemental doping in Ni-rich oxide cathode
 - ✓ Engineering electrolyte
 - ✓ Assembly of press cell for all-solid-state Li batteries
 - ✓ Electrochemical tests (main measurements: long-term cycling test, rate performance, EIS, CV, LSV, and GITT)
 - ✓ Operating microscopy (SEM and TEM)
 - ✓ Material characterizations (XRD, Raman, XPS, TOF-SIMS, FT-IR, and UV-Vis spectroscopy)
 - ✓ Synthesis of materials for advanced energy storage

SCI(E) PUBLICATIONS

1. **Jong Hun Sung**,[†] Un Hwan Lee,[†] In Won Yeu, Muhammad Irfansyah Maulana, Joonhee Kang,* Jong-Sung Yu*
“Alloy-assisted stabilization of thin Li metal anodes in pouch-type cells”
Advanced Energy Materials. 2025, 2500279.
2. **Jong Hun Sung**,[†] Soyun Lee,[†] Jeong-Hoon Yu,[†] Jiwon Lee, Bo Yu, Dong-Hyun Lee, Ha-Young Lee, Seung-Tae Hong, Ibnu Syafiq Imaduddin, Joonhee Kang,* Jong-Sung Yu*
“Engineering Hollow-Structured Carbon Framework to Facilitate High-Sulfur-Content Encapsulation for Lithium-Sulfur Batteries”
Small, 2025, 21, e08609
3. Bo Yu, Caleb Gyan-Barimah, Jian Wang, Muhammad Irfansyah Maulana, **Jong Hun Sung**, Jeong-Hoon Yu, Seung-Tae Hong, Kunpeng Wang, Jong-Sung Yu
“Magnesiothermally Synthesized TiO-Decorated 3D N-Doped Graphitized Porous Carbon as a

Multifunctional Sulfur Host for Li–S Batteries”

ACS Nano 19 (43), 37879-37894

4. Muhammad Irfansyah Maulana, Jungho Kim, Ha-Young Lee, Caleb Gyan-Barimah, Yi Wei, Jeong-Hoon Yu, **Jong Hun Sung**, Bo Yu, Kug-Seung Lee, Seoin Back,* Jong-Sung Yu*

“Magnetocrystalline Anisotropic Platinum–Palladium–Iron Ternary Intermetallic Alloy for Enhanced Fuel Cell Electrocatalysis”

Advanced Materials. 2025, 37, e10314

5. **Jong Hun Sung**,[†] Un Hwan Lee, Jiwon Lee, Bo Yu, Muhammad Irfansyah Maulana, Seung-Tae Hong, Hyun Deog Yoo, Joonhee Kang,* Jong-Sung Yu*

“Dynamic Cycling of Ultrathin Li Metal Anode via Electrode-Electrolyte Interphase Comprising Lithiophilic Ag and Abundant LiF under Carbonate-Based Electrolyte”

Advanced Energy Materials. 2025, 2500279

6. Yi Wei, Caleb Gyan-Barimah, **Jong Hun Sung**, Muhammad Irfansyah Maulana, Ha-Young Lee, Chao Han, Jong-Sung Yu*

“Pt (ii) as an active site supported on superhydrophilic nickel foam with boosted electrocatalytic hydrogen evolution performance”

Journal of Materials Chemistry A, 13(24), 18987-18995

7. Jeong-Hoon Yu, Byong-June Lee, Shiyuan Zhou, **Jong Hun Sung**, Chen Zhao, Cheol-Hwan Shin, Bo Yu, Gui-Liang Xu,* Khalil Amine,* Jong-Sung Yu*

“Tailoring-Orientated Deposition of Li₂S for Extreme Fast-Charging Lithium–Sulfur Batteries”

ACS Nano 18 (46), 31974-31986

8. Byung Yeon Kang, Hyein Jeong, Yeji Choi, Yeongin Ok, **Jong Hun Sung**, Vedi Kuyil Azhagan Muniraj, Sri Charan Reddy, Sangram Keshari Mohanty, Madhusudana Koratikere Srinivasa, Hyun Deog Yoo*

“Entropymetry of active materials for Li-ion batteries”

The Journal of Physical Chemistry C 128 (13), 5436-5442

9. Bo Yu, Jeong-Hoon Yu, **Jong Hun Sung**, Jiaqi Pan, Jong-Sung Yu*

“Construction of NiCoO₂-(Ni, Co) Se₂ hybrid nanorods as an effective bifunctional interlayer for lithium-sulfur batteries”

Journal of Energy Storage 113, 115599

10. Muhammad Irfansyah Maulana, Ha-Young Lee, Caleb Gyan-Barimah, **Jong Hun Sung**, Jong-Sung Yu*

“Hollow PtCo alloy nanostructures for efficient oxygen reduction electrocatalysis in polymer electrolyte membrane fuel cells”

Journal of Materials Chemistry A 12 (41), 27979-27986

11. **Jong Hun Sung**, Taewan Kim, Soljin Kim, Fuead Hasan, Sangram Keshari Mohanty, Madhusudana Koratikere Srinivasa, Sri Charan Reddy, Hyun Deog Yoo*

“Li₃PO₄-Coated Graphite Anode for Thermo-Electrochemically Stable Lithium-Ion Batteries”

Energies 16 (17), 6141

12. **Jong Hun Sung**, Tae Wan Kim, Hyeong-Ku Kang, So Young Choi, Fuead Hasan, Sangram Keshari Mohanty, Jinhong Kim, Madhusudana Koratikere Srinivasa, Heon-Cheol Shin, Hyun Deog Yoo*

“Superior high voltage LiNi_{0.6}Co_{0.2}Mn_{0.2}O₂ cathode using Li₃PO₄ coating for lithium-ion batteries”

Korean Journal of Chemical Engineering 38 (5), 1059-1065

13. Veera Murugan Arivunithi, Soohyun Kim, Jungmin Choi, **Jong Hun Sung**, Hyun Deog Yoo, Eun-Sol Shin, Yong-Young Noh, Yeong-Soon Gal, Hyunjung Lee, Sung-Ho Jin*

“Enhanced efficiency and reduced hysteresis by TiO₂ modification in high-performance perovskite solar cells”

Organic Electronics 86, 105922

14. Fuead Hasan, Jinhong Kim, Heewon Song, Seon Hwa Lee, **Jong Hun Sung**, Jisu Kim, Hyun Deog Yoo*

“Effect of Particle Size and Doping on the Electrochemical Characteristics of Ca-doped LiCoO₂ Cathodes”

Journal of Electrochemical Science and Technology 11 (4), 352-360

AWARDS AND HONORS

2025 [Paper award] Certificate of Excellence, Daegu Gyeongbuk Institute of Science & Technology, Republic of Korea

2019 [Poster award] Certificate of Excellence, Korean Electrochemical Society, Republic of Korea