JAE CHUL KIM

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Stevens Institute of Technology
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Current

Stevens Institute of Technology, Hoboken, NJ
Assistant Professor, Department of Chemical Engineering & Materials Science 2018-Present

Education

Massachusetts Institute of Technology, Cambridge, MA
PhD, Department of Materials Science & Engineering (Advisor: Gerbrand Ceder) 2014

Korea University, Seoul, Korea
ME, Department of Materials Science & Engineering (Advisor: Sahn Nahm) 2007
BE, Department of Materials Science & Engineering 2005

Experience

Korea University, Seoul, Korea
Visiting Professor, Department of Materials Science & Engineering 2020-Present

Lawrence Berkeley National Laboratory, Berkeley, CA
Postdoctoral Fellow, Materials Sciences Division 2015-2018

Massachusetts Institute of Technology, Cambridge, MA
Postdoctoral Associate, Department of Materials Science & Engineering 2014-2015

Awards

Department of Energy, Office of Science, Basic Energy Sciences
Early Career Research Program Award 2022

American Chemical Society, Petroleum Research Fund
Doctoral New Investigator Award 2021

Research Interests

Solid-State Chemistry and Electrochemistry for Energy Storage Materials
- Lithium/Sodium/Potassium-ion battery Cathode Materials
- Oxide/Thiophosphate/Halide-Based Solid Electrolyte Materials
- Lithium Metal/Silicon Anodes

Microstructural and Interfacial Characterization of All-Solid-State Batteries
- Micro X-ray Computed Tomography
- Cryogenic Electron Microscopy

Advanced Manufacturing for Next-Generation Batteries
Electrospraying of nanopowders, Electrospinning of nanofibers, Electropainting of nanosheets, and Electrowriting of nanostructures

Competitive Grants (Active)

Samsung SDI, Global Research Outreach
PI, A Study on the Improvement of Life and Storage Characteristics of Cathode for High Voltage ($300,000) 2023-2025

Department of Energy, Office of Science, Basic Energy Sciences
PI, Designing Chemical Disorder in Solid-State Superionic Conductors ($750,000) 2022-2027

Department of Defense, US Army Devcom
Co-PI, Resiliency of Energy Resources and Supply Chain for Energetics Industrial Base ($2,880,000, my share: $331,852) 2022-2024

Competitive Grants (Completed)

American Chemical Society, Petroleum Research Fund
PI, Design Principles of Sodium-Functionalized Microporous Membranes for Desulfurization of Petroleum Products ($110,000) 2021-2023

Korean Institute of Energy Research, Joint Research Program
PI, Interface Engineering for Integration of a Garnet-Based Solid Electrolyte and a High-Voltage Cathode for All-Solid-State Batteries ($84,460) 2021-2022

LG Energy Solution, Battery Innovation Contest
PI, Reversible Li Plating and Stripping Enabled by Electrospun Fiber-Functionalized Current Collectors for Anode-Free Lithium Batteries ($150,000) 2020-2022

Internal Grants (Completed)

Stevens Institute of Technology, Bridging Grant
PI, Electrospun Fiber-Functionalized Li Metal Anodes for Energy-Dense Batteries ($20,000) 2019-2020

PSEG Foundation, Stevens-PSEG Energy Innovation Gift Fund
Co-PI, Sustainable Energy Platforms and Technology ($2,700,000, my share $300,000) 2018-2023