

Dongjae Shin

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Education

- University of Michigan**, Ann Arbor, MI Aug. 2022 — Present
Ph.D. candidate, Materials Science and Engineering
- Studying solid electronics and solid ionics for microelectronic device application.
Advisor: Yiyang Li
- Korea Advanced Institute of Science and Technology (KAIST)**, Daejeon, South Korea Mar. 2020 — Feb. 2022
Master of Science, Chemical and Biomolecular Engineering
- Explored lithium metal batteries with solid electrolytes such as polymers and ceramics. Advisor: Hee-Tak Kim
- Konkuk University**, Seoul, South Korea Mar. 2014 — Feb. 2020
Bachelor of Science, Chemical Engineering, GPA: 4.36/4.5 (97.6%)
- Attained 1st class honors and awarded 3 times of Dean's lists.

Experience

- Part-time Researcher in KAIST** Mar. 2022 — Jun. 2022
- Developing and understanding all-solid-state batteries.
 - Fabricating sulfide based solid electrolytes and their characterization.
 - Designing 3D structure current collector for all-solid-state battery application.
- Product Development Internship in COSMOS Lab** Jan. 2022 — Mar. 2022
- Aqueous zinc bromine battery development consulting.
 - Understanding aqueous battery system and developing prototypes.
- Undergraduate Research Internship in Konkuk University** Aug. 2018 — Jan. 2019
- Studied conducting polymers which are applied in organic semiconductors.
 - Experimented organic synthesis, polyurethane, and assessed its mechanical properties.
- Chemical, Biological, Radiological, and Nuclear (CBRN) Specialist** Jan. 2016 — Oct. 2017
Republic of Korea Army
- Achieved the leadership rank of sergeant and honorable discharge.
 - Received an awarded certificate due to a devoted attitude toward the military.

Skills & Abilities

- Materials characterization:** High resolution powder or thin film XRD, XRR, XPS, ToF-SIMS, SEM (SE, BSE, EDX imaging), Dispersive Raman spectrometer, FR-IR, and DSC
- Microelectronic device analysis:** Voltage-Current sweeps and pulses for memristors
- Electrochemical cell design:** Lithium metal battery, Lithium-ion battery (graphite, LTO, LCO, LFP, NCM), Aqueous battery (Zn-Br)
- Electrochemical analysis:** Galvanostatic cycling, Cyclic voltammetry, Linear sweep voltammetry, Chronoamperometry, Chronopotentiometry, GITT, PITT, Electrochemical impedance spectroscopy (EIS), Ionic conductivity and transference number calculation.
- Simulation:** COMSOL Multiphysics (Finite element method), Material Studio (DFT calculation, MD simulation)
- Other software:** Programs for graphical and schematic artworks (Origin, Illustrator, AutoCAD, Rhinoceros 3D), Programs for electrochemical analysis (EC-lab, ZView, CView, MultiStat), MATLAB