HANK WANG

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SKILLS

- Materials characterization skills: FIB-SEM, XRD, EDS, EBSD, TEM, EIS, FTIR.
- Programming language: Python and Java.
- Industrial skills: Cleanroom Microfabrication, Glove Box Fabrication, CVD, PVD, FMEA.
- Software skills: Mathematica, AutoCAD, Visio, ImageJ, LAMMPS, Microsoft Office.
- Human skills: Problem solving, Good Teamwork, High Adaptability, Self-driven, Analytical Thinking, Empathy.

EDUCATION

University of California at Berkeley, Master of Science, Materials Science and Engineering
GPA: 4.00/4.00; Graduation in **May 2022.**

University of California at Berkeley, Bachelor of Science, Materials Science and Engineering
GPA:3.99/4.00; Graduation with **Highest Honors** in May 2020.

Relevant Coursework: Materials Characterization; Corrosion; Microfabrication Technology; Thin-film Science and Technology; Semiconductor Materials; Electronic Materials; Polymer Materials, Computer Programming.

WORK EXPERIENCES

QuantumScape, *Research Intern*, R&D Department   Feb. 2022 – Present
- Designed experiments to develop and verify new materials in solid-state cathodes.
- Fabricated cylinder symmetric cells and pouch cells in glove box to test the performance of newly developed materials, including interfacial reactivity, area specific resistance, and durability.

Tesla, *Battery Processing Intern*, BMP Department   Jun. 2021 – Jul. 2021
- Reconstructed and optimized a battery processing reuse line through equipment calibrations, process adjustments, and fault injections, which reduced two workforce counts and fulfilled the pace requirement completely.
- Identified foreign matters in battery pack using characterization skills such as SEM and Infrared Spectrum as aluminum oxides formed by aluminum powder scratched off due to friction between parts.

CATL, *Engineering Intern*, Energy Storage Solution Department   Oct. 2020 – May 2021
- Solved technical problems and provided proposals for ten foreign customers with about 2GWh energy storage projects in total, of which 250MWh became purchase orders during the internship.
- Proposed new battery rack arrangements, which lead to 1% benefits in dischargeable energy expectedly.
- Designed a black start mode, a snow roof, and a cable tray for energy storage battery racks to fulfill customers' needs.

GE Healthcare, *Data Intern*, After-sale Service Department   May 2018 – Aug. 2018
- Developed executable programs using Python to automatically download and analyze thousands of data, which simplified employees' manual working process.
- Tracked and analyzed in-use x-ray tube data using Weibull++ for residual life prediction of the tubes.

RESEARCH & PROJECTS

Project: Semiconductor Microfabrication   Aug. 2019 – Dec. 2019
- Microfabricated a Metal-Oxide-Semiconductor Field-Effect Transistor (MOSFET) starting from a silicon wafer in a cleanroom and conducted measurements that verified its usability.

Research at Lawrence Berkeley National Lab & UC Berkeley   Jun. 2019 – Present
- **Manufacturing and Characterizing Ultra-thin LLZO Ceramic Electrolytes**
  - Manufactured ultra-thin (<100µm) LLZO ceramic electrolytes and optimized the grain size and porosity by adjusting the composition and sintering conditions, such as temperature, time, and ramp rate.
  - Characterized the surface morphology of LLZO ceramic electrolytes through SEM imaging and EBSD analysis.

- o Measured local ionic conductivities using electrochemical impedance spectroscopy (EIS) and microelectrodes to study how crystal orientations affect ionic conductivities.
- o Conducted FIB lift-out and ion-milling for TEM sample preparation.

- **Mechanical Modeling and Characterization of Composite Cathodes of NCM/LPS Solid-State Batteries**
  Publication: Shi, Tan & Zhang, Yaqian & Tu, Qingsong & **Wang, Yuhao** & Scott, M. & Ceder, Gerbrand. (2020). *Characterization of mechanical degradation in an all-solid-state battery cathode*. Journal of Materials Chemistry A.
  - o Performed FIB-SEM tomography to characterize morphology changes in the composite cathode (NCM/LPS) due to charging cycles and quantified the increasing void volume through cycles.
  - o Segmented the sliced images obtained from FIB-SEM based on phases using machine learning plugin in the ImageJ software and reconstructed them into 3D volume using the Dragonfly software.
  - o Explored in-situ SEM setup to study morphology changes and Li dendrite growth in the composite cathode.

- **Plasmon Surface Energy of Gold Nanoparticles**
  - o Wrote Python scripts to process EELS spectrum images to study the plasmon surface energy of Au nanoparticles using the deconvolution method, which showed reasonable trends according to simulations.