

YUHAO WANG

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EDUCATION

University of California at Berkeley, Master of Science, Materials Science and Engineering May 2022

University of California at Berkeley, Bachelor of Science, Materials Science and Engineering May 2020

GPA:3.99/4.00; Graduation with Highest Honors

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

SKILLS

- Materials characterization skills: FIB-SEM, XRD, EDS, EBSD, TEM, EIS, FTIR.
- Programming language: Python and Java.
- Industrial skills: Cleanroom Microfabrication, Chemical Vapor Deposition, Sputtering, FMEA.
- Software skills: Mathematica, AutoCAD, Visio, ImageJ, LAMMPS, Weibull++, Latex, Microsoft Office.

WORK EXPERIENCES

Tesla, Battery Processing Intern, BMP Department Jun. 2021 – Jul. 2021

- Reconstructed and optimized a battery processing reuse line, 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.
- Discussed new usage scenarios of energy storage battery racks with customers, such as DC-Coupling with PV and utilizing DCDC to solve non-equalizing current between racks, which led to more than 100MWh potential projects.

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

Research at Lawrence Berkeley National Lab & UC Berkeley Jun. 2019 – Present

- **Manufacturing and Characterizing Ultra-thin LLZO Ceramic Electrolytes**
 - Manufactured ultra-thin ($<100\mu\text{m}$) 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.
 - Measured local ionic conductivities using electrochemical impedance spectroscopy (EIS) and microelectrodes to study how crystal orientations affect ionic conductivities.
 - 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.

 - 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.
 - 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.
 - Explored in-situ SEM setup to study morphology changes and Li dendrite growth in the composite cathode.
- **Plasmon Surface Energy of Gold Nanoparticles**
 - 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.

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.