DaJae Doral

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EDUCATION

Northern Arizona University Anticipated Graduation Date: Dec 2022

Bachelor of Science in Mechanical Engineering

Awards: Lumberjack Scholars Award, Outstanding Honors Student Award, Gold Axe Award

EXPERIENCE

Urdea Undergraduate Research Award [Northern Arizona University]

Principal Investigator Aug 2022 - Dec 2022

- Designed a moisture-controlled chamber to aid in the characterization of ion exchange membrane diffusivity in variable conditions.
- Collected electrochemical impedance spectroscopy measurements
- Analyzed how sample holder mechanical properties influence electrical conductivity results

Advanced Materials Synthesis NSF REU [University of Virginia]

Research Assistant May 2022 - Aug 2022

- Developed laser powder bed fusion (LPBF) 3D printing process parameters for refractory materials.
- Prepared samples, conducted scanning electron microscopy, and energy dispersive spectroscopy
- Created CAD build files for a LPBF 3D printing process

Senior Project [Northern Arizona University]

Project Manager Jan 2022 - Dec 2022

- Constructed a solar thermal water heating system complete with sensors for use in the NAU renewable energy laboratory along with developing lab procedures for course TAs and students
- Became familiar with ICC/SRCC 100 and 300 standards to design a complaint system
- Organized and lead team meetings, managed deadlines and deliverables

Arizona Space Grant Intern [Northern Arizona University]

Research Assistant Aug 2021 - May 2022

- Characterizing Carbon Dioxide capture chemistry of ionic exchange membranes
- Designed sample holders in SolidWorks for use in experimental data collection
- Operated a potentiostat for EIS data collection, processing in MATLAB

INTENSE NSF REU [New Mexico Tech]

Research Assistant May 2021 - Aug 2021

- Collected dynamic tensile strength measurements of Poly(methyl methacrylate) PMMA “theta specimens”.
- Machined PMMA samples on a vertical mill
- Operated a Split Hopkinson pressure bar to collect stain data in sync with a high-speed camera.

Programming for Engineers [Northern Arizona University]

Teaching Aide Aug 2019 - May 2021

- Answered questions about MATLAB and graded exams for a class of 80-200 students
- Held up to 4 office hours a week for students to seek additional help

TECHNICAL SKILLS

ANSYS, MATLAB, SolidWorks, Vertical Mill, High Speed Imaging, Scanning Electron Microscope

RESEARCH GRANTS

Urdea Undergraduate Research Award, PI: *Direct Air Capture and CO2 Mineralization*, NAU, $4,966, 2022.

PRESENTATIONS

D. Doral, J. Kimberley, “Theta Specimens for Dynamic Strength Measurement of Brittle Materials”, Presented at the Society for Experimental Mechanics Annual Conference, Pittsburgh, PA, Jun 14, 2022.

D. Doral, J. Wade, “Direct Air Capture Using a Moisture Swing: Electrochemical Impedance Spectroscopy for Characterization” Presented at the Arizona Space Grant 2022 Symposium, Tucson, AZ, Apr 23, 2022.

D. Doral, J. Ma, “Laser Powder Bed Fusion Additive Manufacturing of Refractory Materials” Presented at the University of Virginia Advanced Material Synthesis REU Symposium, Charlottesville, Virginia, Aug 5, 2022.

PROFESSIONAL SOCIETIES

Society of Women Engineers

(Member) Dec 2019 - Present
(Secretary) Dec 2021 - May 2022
(President) May 2022 - Dec 2022

American Society of Mechanical Engineers

(Member) August 2022 - Present

VOLUNTEER WORK

RAMP Mentor Fall 2022

- Supported undergraduate students seeking research opportunities on and off campus
- Helped students with internship applications, proposal writing, and communicating with prospective research advisors

Flagstaff Science in the Park Volunteer Fall 2022

- Talked with the Flagstaff community about the carbon capture research taking place
- Helped lead an activity about carbon capture for community members of all ages

Welcome Jack Fall 2019

- Helped incoming Freshman move into NAU dormitories.

Flagstaff Science in the Park Fall 2021

- Organized and lead an engineering related activity for community members of all ages
- Spoke with community members about engineering
