CONTACT

(920) 370 - 1896

mary.breenlyles@gmail.com

www.marybreenlyles.com

721 N 1st Street Unit C
DeKalb, IL 60115

ACCOMPLISHMENTS

Co-author of ASME Publication (2017)
Performance of Supercharged Engine Fueled with CTI Binary Mixture at Different Injection Pressures

Walter S. Haven Physics Prize (2017)
Awarded to students in physics who complete outstanding research projects. Granted specifically in honor of excellent work with the Physics Department's accelerator.

Departmental Honors (awarded May 2017)

Phi Beta Kappa Member (inducted May 2017)

Presidential Scholarship (2014-2017)
Beloit College's prestigious honor awarded for exceptional academic achievement.

SKILLS

- MACHINING
- WELDING
- SOLDERING
- JAVA
- PYTHON
- UNIX / LINUX
- MATLAB
- HPC CLUSTERS
- CFD
- LabVIEW
- TCL
- LAMMPS
- SQL

Mary Elizabeth Breen-Lyles

ENGINEER - RESEARCHER - PROGRAMMER

SUMMARY

Fast-learning, critically-thinking, conscientious worker with substantial design and programming experience from a wide breadth of engineering and research applications. Maintains strong mathematical aptitude and a passion for problem-solving. Fantastic communicator and tenacious team member with an appetite for learning and enthusiasm for achieving project goals.

EDUCATION

M.S. Mechanical Engineering, Northern Illinois University (August 2019) - GPA: 3.9

- Certificate of Graduate Study: Thermal, Fluid, and Energy Systems
- Thesis Title: Direct Polymer Grafting as a Method of Preserving the Mechanical Properties of Cellulose Nanocrystals in the Presence of Moisture
- Took courses in CFD simulation, and thermodynamic systems

B.S. Physics, Beloit College (May 2017) - GPA: 3.9

WORK EXPERIENCE

2018

Graduate Research Assistant, Northern Illinois University
DeKalb, IL (January 2018 - present)

- Designed and executed molecular simulations across distributed systems to demonstrate the effectiveness of polymer grafting at enhancing mechanical properties of a cellulose nanofiller
- Conducted a literature review of CNC use in materials, accompanied by comprehensive computational materials design and programming.
- Use of VMD, LAMMPS, OVITO, NAMD, and Tcl/Python3 and Excel for data analysis and acquisition.

2017

Research Assistant, Beloit College
Beloit, WI (August 2016 - May 2017)

- Repaired handmade proton accelerator via machining and configurational planning for new/existing instrumentation
- Designed and wired a new power supply switching system for the accelerator and machined a box to house it
- Worked extensively on the electromagnet including the cooling system, Faraday cup implementation, electrical load and bending angle calculations
- Tuned magnet based on initial predictions and later testing. Used MATLAB, thermal imaging, and thermocouple, voltmeter, ammeter data for analysis

2016

Undergraduate Research Fellow, Georgia Southern University
Statesboro, GA (June 2016 - August 2016)

- Developed LabVIEW programs for pressure transducers, accelerometers, and flow meters on a jet turbine and diesel engine to transfer, process, and analyze the engine data
- Machined and/or welded new pieces for a diesel engine to help with safety or to aid in data acquisition
- Designed, machined, and soldered new signal amplifier for a pressure transducer
- Gained substantial experience in sensor calibration, instrumentation, advanced data acquisition, programming, and machining

2015

Sustainability Fellow, Beloit College
Beloit, WI (September 2015 - May 2016)

- Wrote program to compute thermodynamic properties of new campus building
- Developed in-depth model using thermal FEA to predict HVAC needs
- Presented at 2016 Student Symposium and to Beloit College Board of Trustees