BRADEN K. OH

NSF Graduate Research Fellow | U-M PEPL | KI6VCC | 818-434-8888 | braden.oh@icloud.com

EDUCATION & AWARDS

- **University of Michigan** - Ph.D. Pre-candidate, Aerospace Engineering — GPA: 4.0/4.0
- **Olin College of Engineering** — B.S. Engineering w/ Physics — May 2023 — GPA: 3.95/4.0.
- **NSF Graduate Research Fellow** — Five-year graduate research fellowship awarded in 2023.
- **Massachusetts Space Grant Undergraduate Research Awards** — 2021, 2022.

TECHNICAL EXPERIENCE

Blue Origin, Blue Alchemist R&D Intern — Summer 2023
R&D internship advancing lunar resource utilization

- Performed fundamental experimental research for Blue Alchemist, an end-to-end, in-situ resource utilization (ISRU) system that extracts oxygen, iron, silicon, and aluminum from lunar regolith to produce solar cells.
- Conducted chemical and metallurgical experiments to create novel technique for silicon extraction and purification.
- Built automated temperature control and data acquisition systems for ultra-high temperature furnace.
- Performed scanning electron microscope (SEM) and spectroscopic studies of ISRU extraction products.

Busek Co. Inc., Electric Propulsion R&D Intern — Summer 2022
Hall effect thruster and plasma source R&D internship

- Studied operating principles of hollow, inductively coupled plasma, and electron cyclotron resonance cathodes.
- Designed and conducted material science experiment to investigate root cause of thruster hardware failure.
- Performed mechanical design activities for, assembled, and conducted vacuum testing on lab model cathodes.

Olin Satellite + Spectrum Technology & Policy (OSSTP) Group, Research Team Lead — Aug 2020-2023
Satellite systems and telecommunications research laboratory

- Wrote MATLAB-based tool for evaluating megaconstellation compliance with FCC interference regulations by performing dynamic interference-to-noise (I/N) calculations.
- Led a team that developed methodology for estimating radiation-induced single event effects rates in CubeSats.
- Built radiation environment model, performed total ionizing dose (TID) analysis, and wrote mitigation plan for the multi-university SWARM-EX CubeSat mission.
- Developed a fastener-free electro-mechanical joint for affixing CubeSat dual-deployable solar panels.
- Conducted interference-to-noise (I/N) compliance validation calculations for the OneWeb satellite constellation.
- Delivered orbital debris assessment report (ODAR) and accompanying NASA DAS re-entry simulation for SWARM-EX.

Olin Plasma Engineering Laboratory, Principal Investigator — 2018-2023
Self-directed undergraduate research lab developing plasma thrusters

- Founded and led undergraduate research group spanning Olin College, Wellesley College, and Brandeis University.
- Developed the first fully-undergraduate Hall thruster to achieve steady operation, at power levels exceeding 600W.
- Designed and fabricated turbopump based high-vacuum test facility for plasma sources.
- Secured funding/in-kind support from partners including MIT, Busek Co., Draper Labs, and the MA Space Grant.
- Lead-authored grant proposals, academic papers, and undergraduate independent study curricula.

NASA Jet Propulsion Laboratory — Summers 2017 & 2018
Systems engineering internships on robotic NASA flagship missions to Mars and Europa

- **Mars 2020 Entry Descent & Landing Intern (2018) -** Designed and performed flight software system verification tests in a flight hardware testbed and developed automation capabilities for Entry, Descent, and Landing (EDL) simulation engines for the Mars 2020 (Perseverance) rover team.
- **Europa Fault Protection Intern (2017) -**Wrote interactive data visualization software to aid in fault tree analysis (FTA), analyzed the use of SysML as a tool to model spacecraft fault protection systems, and developed high-level FTA templates for lab-wide use (has been used by Europa Clipper, Europa Lander, and Psyche missions).

SKILLS & CERTIFICATIONS

Laboratory	Scanning electron microscope; induction furnaces; vacuum chamber design and operation; live cathode, Hall thruster, and ECR device testing; analog instrumentation, including calibration curves.
Software	Python; MATLAB; STK (L1 Certification); LTspice; LaTeX; NASA DAS; TRAD OMERE.
Fabrication	Rapid prototyping w/ laser cutter and FDM/SLA/DMLS 3D printers; basic machine shop and sheet metal tools; manual & CNC mill; manual & CNC plasma cutting; MIG welding; brazing.
CAD	Fusion 360 CAD/CAM, Solidworks, KiCAD (PCB design), Autodesk Inventor Certified User.
Certifications	FCC ham radio General license (2022); STK L1 (2021); LDS Bishop's Storehouse system certification for forklift operation (2020); NASA JPL certifications for radiation (2018) and ESD environments (2017).