JAKE KETKO

MATERIALS & NANOSCIENCES STUDENT

CONTACT

[redacted]

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Jake Ketko

Profile Webpage

SUMMARY

Passionate and analytical Materials and Nanosciences student conducting research in catalyst design. Has a range of experience in academic, commercial and government lab settings along with ample experience with industry collaborations. Eager to continue exploring my research interests in an academic setting.

SKILLS

- Computer literacy
  - Python
  - Computational techniques
  - UNIX system administration
- Mechanical prototyping
  - CAD design
  - Additive and subtractive manufacturing
  - Project management skills
- X-Ray diffraction & Rietveld refinements
- Thermal Analysis (TGA, DSC)
- Spectroscopy (FTIR, UV-Vis)
- Chromatography and mass spectrometry

RELEVANT ACTIVITIES

Quantum Cryptography School for Young Students (QCSYS)

University of Waterloo — Summer 2021

- Learned about quantum quantum encryption, key distribution, and post-quantum encryption
- Explored quantum computer-interfacing python libraries

WORK EXPERIENCE

Undergraduate Research Assistant – Smith Research Group

University of Waterloo — May 2025 - Present
Ranked Outstanding

- Prototype material formulations and processing systems for transition metal oxide ceramic catalyst supports
- Test and optimize appropriate materials for the catalysts of interest
- Design machines and protocols to follow through with scale-up of synthesis for industrial production

Direct Carbon Fuel Cell Research Assistant

Natural Resources Canada — September 2024 - December 2024
Ranked Outstanding

- Prepared and tested modifications to energetic materials for industry standard molten carbonate direct carbon oxidation fuel cells
- Analyzed and presented quantitative results and interpretations
- Worked frequently with hazardous materials including molten carbonates and refractory glass wools

Polymer Research and Development Co-op

IPEX Technologies Inc. — January 2024 - April 2024
Ranked Outstanding

- Independently researched and conducted tests on various commercial chlorinated PVC formulations
- Processed results from characterization tests, prepared technical reports, and delivered presentations to upper management
- Wrote and implemented a python tool for a database migration

Robotics Engineering Assistant

Robotic Assistance Devices — February 2022 - August 2022

- Led R&D project on energy transfer material, designed a prototype, and successfully applied the results to the commercial design
- Verified mechanical and electrical properties of robot prototypes, compiled the data and presented findings to the project leads
- Refined and trained computer vision and machine learning algorithms for object recognition

EDUCATION

Candidate for Honours Materials and Nanosciences

University of Waterloo — Anticipated Graduation: Spring 2027

- Develop lab and research skills in the areas of solid state chemistry and physics
- Learn about and employ standard industry practices in various fields

REFERENCES AND TRANSCRIPT AVAILABLE UPON REQUEST