

Aditi Sharma

2A Chemical Engineering

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Only available for a 4-month work term

Summary of Knowledge and Skills

- High levels of competency in a chemical laboratory setting with experience in experimental planning and design, measurement and manipulation of data including expertise in lithium and zinc ion battery design and construction
- Analyzed battery designs by studying the effects of high current charge/discharge degradation in addition to performance optimization of hydrogen fuel cells through modeling, simulation and operation processes
- Maximized productivity by paying attention to detail in order to reduce experimental error and meet time constraints
- Highly proficient in MATLAB, Microsoft Office and Aspen.
- Independently placed second overall in the Caribbean at the NIHERST's Regional Caribbean Youth Science Forum (CYSF) innovation and design challenge.
- Exceptional communication, leadership and organizational skills developed through volunteer work as well as previous employment

Relevant Experience

Research Assistant

September – December 2017

Power Sources Lab, University of Waterloo

- Gained high levels of knowledge and competence in using Aspen, Microsoft Excel, Visio and MATLAB to analyze, model and simulate the operation and degradation of hydrogen fuel cells and a variety of different battery chemistries (LiCoO₂, LiMn₂O₄, Lead Acid, LiFePO₄, LiNiMnCoO₂)
- Optimized battery performance by following test methods and manipulating electrode material and arrangement to evaluate long term degradation
- Independently constructed fully functional battery management test stations (including connections and RS-232 communication). Gained knowledge in the use and handling of compressed gases such as Argon, Hydrogen and Nitrogen.

Laboratory Assistant

January – April 2017

Civil Engineering Lab, University of Waterloo

- Effectively assisted graduate students and research associates in R&D activities on pavement materials at the Centre for Pavement and Transportation Technology.
- Tested the strength of asphalt mixtures with many variables such as temperature and compression
- Developed numerous laboratory skills while using several advanced equipment including, but not limited to, a spectrophotometer and a mass spectrometer

Innovator

May – August 2016

NIHERST - Caribbean Youth Science Forum

- Independently built a device using common household materials (excluding batteries and motors) to charge a cell phone. (The process involved extensive research and experimentation)
- Gained large amounts of experience in the use and performance of several biological techniques while conducting experiments such as antibiotic susceptibility of different micro-organisms

Education

Candidate for Bachelor of Applied Science

September 2016 – Present

Chemical Engineering Co-operative Program, University of Waterloo

Cumulative Average of 86.5%

Relevant Courses:

- CHE 200: Equilibrium Stage Operations
- CHE 220: Process Data Analysis
- CHE 230: Physical Chemistry 1
- CHE 290: Chemical Engineering Lab 1
- CHEM 262: Organic Chemistry for Engineering (Including Labs)
- MATH 217: Calculus 3 for Chemical Engineering

Awards and Other Involvements

NSERC Undergraduate Student Research Award

September 2017 – September 2018

- Awarded NSERC grant for undergraduate research

National Scholarship Winner

October 2016

- Natural Science Scholarship awarded by the government of the Republic of Trinidad and Tobago for excellence in the field of Science and Innovation

President Scholarship of Distinction, University of Waterloo

September 2016

- Awarded for high admissions average (95-100%)

Trinidad and Tobago Mathematics Olympiad

September 2010 – June 2016

- Obtained a certificate of distinction each year
- Placed in the top 20 students in 2016 in Trinidad and Tobago

References

Mr. Rudranath K. Maharaj

Land Surveyor, Law and Land Management Department, Petroleum Company of Trinidad and Tobago

Contact Information: rudranath.maharaj@petrotrin.com

Mr. Peter Mikhailenko

Civil Engineering Post-Doctoral at the University of Waterloo

Contact Information: p2mikhailenko@uwaterloo.ca

Publications

Maharaj-Sharma, R. & Sharma, A. (2017). Using ICT in secondary school science teaching – What students and teachers in Trinidad and Tobago say? *European Journal of Education Studies*, 3 (2), 168-181.