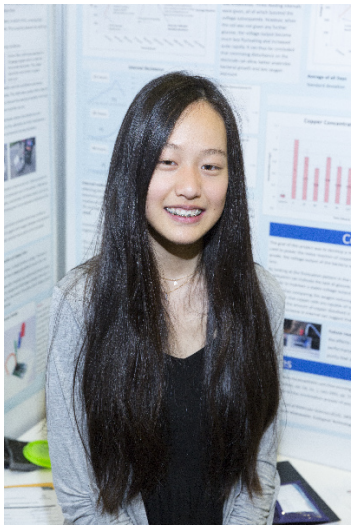
CWSF 2018 - Ottawa, Ontario



Yimeng Li

Developing a Novel Bacterial-Induced Cu(II) Crystallization Method

Challenge: Resources
Category: Intermediate
Region: Greater Vancouver
City: Vancouver, BC
School: Sir Winston Churchill Secondary

Abstract: Copper is an essential, finite resource which is being consumed at an alarming rate. Many copper wastes are never recycled, and end up in the environment. In this project, a novel recovery system was developed to selectively re-crystallize and purify dissolved copper ions from any source of contaminated wastewater. Through the interdisciplinary combination of microbiology and thermodynamics, it was possible to achieve recovery without electricity.

Biography

Hi there! My name is Yimeng Li, and I am a grade 10 student attending Sir Winston Churchill Secondary in Vancouver BC. I have always held a strong passion for all aspects of science, especially electrical engineering. This year, I became inspired to study thermodynamics after exposure to a physics lab. At the same time, I was reading an article about an imminent metal shortage problem. It is estimated by the U.S. Geological Survey (USGS) that a child born today will use approximately 1,309 pounds of copper ore in its lifetime. Consequently, metals, as a finite resource are being consumed at an alarming rate. In my project, I combined many aspects of chemistry, thermodynamics, and microbiology. My goal was to develop a system capable of selectively capturing and purifying copper from any source of wastewater. By using microorganisms to drive this system, I was also able to eliminate the need of any electricity. I hope that one day, this system can help the effort in lessening our dependence on unsustainable copper mining.

Awards	Value
Excellence Award - Intermediate - Silver Medal Sponsor: Youth Science Canada	
Western University Scholarship Silver Medallist - $2000 Entrance Scholarship Sponsor: Western University	$2 000
Total	$2 000

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