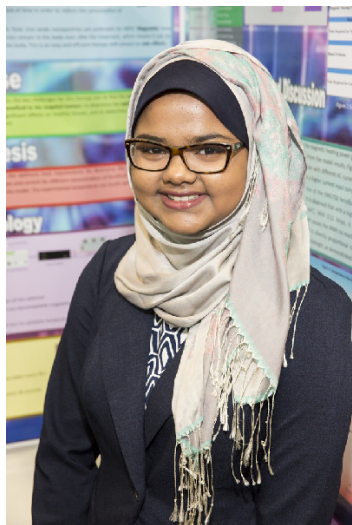


# CWSF 2015 - Fredericton, New Brunswick



## Tasnia Nabil

### A Novel Mathematical Model for Ferromagnetic NanoTherapy to Cure Cancer

**Challenge:** Health

**Category:** Intermediate

**Region:** Windsor

**City:** Windsor, ON

**School:** Massey S.S.

**Abstract:** This project focuses on the engineering behind ferromagnetic nanofluid heating for cancer therapy. A novel mathematical model was developed and validated with a small-scale prototype. Two different concentrations of magnetic nanofluids were tested at different frequencies with different currents to determine the optimum combination for this ideal cancer therapy.

#### Biography

My name is Tasnia Nabil and I am a 9th grade student enrolled in the enrichment program at Vincent Massey Secondary School. This is my 6th Regional Fair and my second time at CWSF. Science has always been my greatest passion, specifically engineering technologies. In previous years, I have examined different effects and determined the optimum environmental factors for photovoltaic technology. Over the years I have received multiple gold medals, and now two trips to CWSF. Last year, I proposed to use nanofluids for improving a solar collector's efficiency. The wide variety of applications for nanotechnology captured my interest and I want to continue research in this field. This year, I have applied nanotechnology into the biomedical field, focusing on the engineering behind a new cancer therapy using magnetic nanoparticles. Aside from science fairs, I have also participated in many math competitions such as COMC, CSIMC, AMC, Pascal, and Fryer. I play soccer and badminton, and I spend a majority of my time writing. Giving back to the community is my inspiration for this project. Presenting this at CWSF is a great opportunity to express my daily scientific inquiries with the world, raising awareness for a sustainable future.

#### Awards

#### Value

Challenge Award - Health - Intermediate Sponsor: AstraZeneca Canada	
Excellence Award - Intermediate - Gold Medal Sponsor: Youth Science Canada	\$250
Western University Scholarship Gold Medallist - \$4000 Entrance Scholarship Sponsor: Western University	\$4 000
<b>Total</b>	<b>\$4 250</b>