

# CWSF 2018 - Ottawa, Ontario



## Devarsh Shah

### A Novel Quartz Crystal Microbalance Based Biosensor for Bacterial Detection

**Challenge:** Health

**Category:** Intermediate

**Region:** Lambton County

**City:** Sarnia, ON

**School:** Northern C.I. & V.S.

**Abstract:** There are many problems with traditional bacterial detection methods, and most attempts to replace them have been in vain. An interesting approach to this problem is to use antigen-antibody cell adhesion and apply it to the concept of the quartz crystal microbalance, which can calculate mass changes by changes in frequency on its surface. Results from many experiments suggest this homemade system is a solution.

#### Biography

My name is Devarsh Shah and I am a tenth-grade student enrolled at Northern Collegiate Institute & Vocational School in Sarnia, Ontario. This is my fourth time at CWSF and seventh regional fair overall. I am a member of the 44 Sarnia Imperial Air Cadet Squadron. My favorite sports are badminton and tennis. I believe community involvement is an important aspect of being a good citizen, which is one of the main reasons I volunteer at Trillium Villa, CogecoTV, and other organizations. I have also participated and place in many academic competitions such as the Gauss Math Competition, the Caribou Math contest, etc. This year, I also represented Canada's only high school team in the international Shell Eco-Marathon. Science has always been one of my greatest passions and I plan on pursuing a career in the medical field. This year my project is based on developing a quartz crystal microbalance system for the detection of bacterial pathogens, to prove its capability as future medical diagnostic. Participating in the science fair is a great experience and I'm looking forward to attending the CWSF in Ottawa this year!

#### Awards

#### Value

Excellence Award - Intermediate - Gold Medal Sponsor: Youth Science Canada	
Western University Scholarship Gold Medallist - \$4000 Entrance Scholarship Sponsor: Western University	\$4 000
Total	\$4 000