

CWSF 2016 - Montreal, Quebec



Jack Edward Mogus

GRAPHENE REINFORCED GUAYULE RUBBER Conductive Hypoallergenic SUPER-NANOCOMPOSITE

Challenge: Innovation

Category: Intermediate

Region: Bay Area

City: Oakville, ON

School: Garth Webb Secondary School

Abstract: Guayule is the only source of natural rubber that has antibacterial/antifungal properties and is free of latex proteins responsible for TYPE 1 (Hev-b) and TYPE IV hypersensitivity. By infusing graphene into guayule rubber, I fabricated the world's first nanocomposite material that is hypoallergenic, antibacterial, antifungal and electrically conductive with enhanced mechanical properties for a wide range of medical applications; including biosensors for cardio function.

Biography

My name is Jack Mogus and I am a grade 10 student at Garth Webb Secondary School. I have always been fascinated by the practical application of using scientific principles in solving everyday problems. My motivation comes from looking at a problem and then thinking 'how can I fix this'. In 2003 my mother was diagnosed with TYPE 1 (Hev-b latex proteins) hypersensitivity with anaphylactic response to exposure. I was compelled to discover a new nanocomposite material that would one day replace medical equipment made from the potentially deadly proteins found in natural rubber latex with a mechanically superior hypoallergenic engineered material that is electrically conductive with antibacterial and antifungal properties. During my free time I actively volunteer in my community and oversee an organization I founded in 2012 called 'Change by YOUth' which ignites positive change locally and globally through volunteerism, leadership and peace. I was recently featured in a documentary for Charity Village (unsung heroes). I love playing hockey and am currently completing my black belt in Taekwondo. The best advice I can give to anyone interested in entering a science fair is to never give up trying, no matter how many obstacles you may face.

Awards

Value

Australian National Youth Science Forum Award - Intermediate Sponsor: National Youth Science Forum Australia	\$1 000
Excellence Award - Intermediate - Silver Medal Sponsor: Youth Science Canada	
Western University Scholarship Silver Medallist - \$2000 Entrance Scholarship Sponsor: Western University	\$2 000
Total	\$3 000