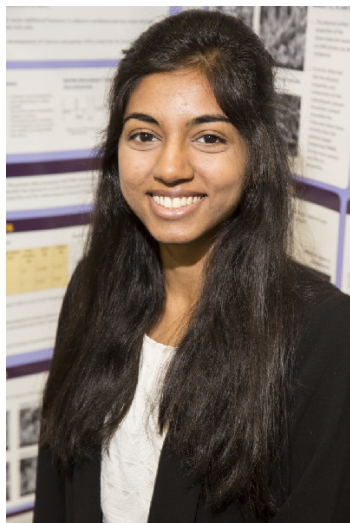


CWSF 2015 - Fredericton, New Brunswick



Samna Aziz

Investigating Ceramic Calcium Phosphate Cements as Bone Replacing Material

Challenge: Innovation

Category: Senior

Region: Bay Area

City: Hamilton, ON

School: Westmount S.S.

Abstract: Degradable and biocompatible calcium phosphate cements serve as potential bone-replacing material for acrylic cements, which have high tensile strength and risk releasing toxic residual monomers. A cement solution of Beta Tricalcium Phosphate and Monobasic Calcium Phosphate Monohydrate was developed and the properties tested/observed. The tensile strength of the solution fell into the range of that of trabecular bone. making it effective and suitable for application.

Biography

Nearly 1 out of every 10 Canadians over the age of 40 suffers from osteoporosis and related fractures. The application of work done within orthopedics and kinesiology inspired me to pursue a research endeavour within the field of biomedical engineering. The basis of my project is on redeveloping standard acrylic bone cements into biodegradable materials as trabecular bone-replacing material. Future research includes experimenting with the cement properties-adding strengthening agents, antibiotics, and retardants into the solution to suit a range of applications. My advice to students thinking about doing a project would be to pursue it. Find something that both interests you and has a meaningful application. Think about something you would change in the world.

Awards

Value

Canadian Society for Clinical Chemists Award - Senior Sponsor: Canadian Society for Clinical Chemists	\$1 000
The Manning Innovation Achievement Award - Senior Sponsor: Ernest C. Manning Awards Foundation	\$500
The Manning Innovation Achievement Award and \$4000 Manning Young Canadian Innovation Award and also receive an additional \$3000 towards their post-secondary education. Sponsor: Ernest C. Manning Awards Foundation	\$4 000
Excellence Award - Senior - Bronze Medal Sponsor: Youth Science Canada	
University of Ottawa Entrance Scholarship Senior Bronze Medallist - \$1000 Entrance Scholarship Sponsor: University of Ottawa	\$1 000
Western University Scholarship Bronze Medallist - \$1000 Entrance Scholarship Sponsor: Western University	\$1 000
Total	\$7 500