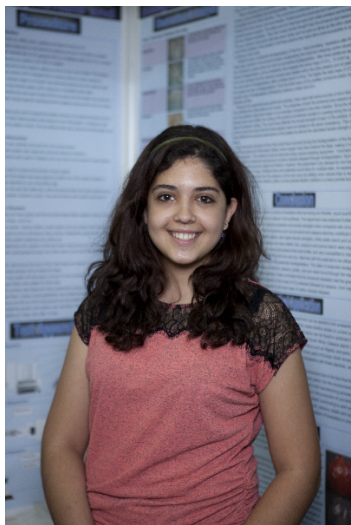


## CWSF 2013 - Lethbridge, Alberta



### Rachel Hanke

#### Arrow Plastic Synthesis and Biodegradation

**Challenge:** Environment

**Category:** Senior

**Region:** Bay Area

**City:** Mississauga, ON

**School:** King's Christian Collegiate

**Abstract:** In this experiment, starch-based bioplastics were synthesized, tested for their tensile strengths and anaerobically biodegraded to demonstrate that bioplastics could be utilized to serve global demands in the place of conventional plastics. Arrowroot starch bioplastic (Arrow Plastic) was the most promising in that it is thin and flexible with the greatest tensile strength of .8MPa and the greatest mass of CO<sub>2</sub> emissions of 26.406 mg.

#### Biography

My name is Rachel Hanke and I am a student at King's Christian Collegiate in Oakville, Ontario. I am actively involved in the sciences, music and sports. Currently, I am the communications and marketing leader of my school's robotics team that has earned a spot at the world's competition. As a prefect at King's, I am a leader that develops a positive environment at school. I have built strong partnerships through volleyball, choir and a service group called "I am Second." By leading at a German language school, I actively reach out in my community. I aspire to continue with studies in the sciences to become a pediatrician. The inspiration for this project came from my research of the uses and disposal of plastics. In research to find an environmentally safe alternative for conventional plastics, I chose to continue my research in starches due to their availability around the world. In further investigations, I plan to research and test substances that can alter bioplastic properties to make them even more suitable for everyday use. The main advice I would give to prospective students is to be open-minded and explore any ideas that you have, as they could become a reality!

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