

# CWSF 2017 - Regina, Saskatchewan



## Annie McLeod

### Marine Brown Algae Extracted Fucoxanthin and Phlorotannin in DSSC

**Challenge:** Energy

**Category:** Intermediate

**Region:** Vancouver Island

**City:** Victoria, BC

**School:** Glenlyon Norfolk School

**Abstract:** For my project, I decided to investigate the use of marine brown algae in dye-sensitized solar cells. Marine brown algae was selected for use due to the presence of phlorotannin and fucoxanthin; two pigments that contribute to the UV and visible light absorbance of dyes extracted from the algae. The cells created in this project were able to produce up to 197 mV of electricity.

#### Biography

My name is Annie McLeod and I am a Grade 10 student at Glenlyon Norfolk School in Victoria, British Columbia. The inspiration for my project came from a kayak trip that I participated in through my school's Marine Adventure Program. During the trip, our guide suggested that we pop the bulbous tips of the rockweed and use the liquid inside as a hand sanitizer. Naturally, I thought this suggestion was bizarre so I decided to put the seaweed's antibacterial properties to the test. Upon researching the antibacterial effects of fucus distichus, I learned about a compound called a phlorotannin and its suggested UV absorption properties. This led me to studying dye sensitized solar cells. Applications of this work could be in creating blinds for windows that absorb UV and produce electricity for your home. My advice for other students is to start working early and persevere through challenges that come up. It is worth the effort!

#### Awards

#### Value

Excellence Award - Intermediate - Gold Medal Sponsor: Youth Science Canada	\$250
Western University Scholarship Gold Medallist - \$4000 Entrance Scholarship Sponsor: Western University	\$4 000
Total	\$4 250