

## CWSF 2014 - Windsor, Ontario



### Gabrielle Le Donne

#### Texting With Vodka

**Challenge:** Innovation

**Category:** Junior

**Region:** Bay Area

**City:** Hamilton, ON

**School:** Corpus Christi

**Abstract:** This project illustrates that molecular communication systems can reliably transmit brief text messages using chemical signals. With simple, inexpensive equipment, text messages were successfully sent using alcohol as the chemical transmission mechanism. The best character error rates achieved were as low as 14.3%, with bit error rates even lower at 2.9%. The findings have implications to mathematical models, micro, and macro real-world applications. ?

#### Biography

My name is Gabrielle Le Donne. I am a competitive figure skater, a black belt in karate, a former Ontario Legislative Page, and a grade 8 student at Corpus Christi School in Hamilton. I am honoured to have won the Director's Award of Excellence, the Gauss Mathematics Award, and a scholarship to McMaster University's LEAP engineering camp. The inspiration for my project happened when I saw an interview featuring Dr. Andrew Eckford who sent a text message using alcohol. I was fascinated by this concept so I researched chemical and molecular communication systems. I then contacted Dr. Eckford and asked for permission to conduct my own experiments. For further investigations, several enhancements could be made such as adding error checking and correcting code to the program and using more sophisticated equipment. This would likely improve results to almost 100 percent error free. My suggestion to students thinking about doing a project is to select a topic that fascinates them. This will make the project more engaging and students will be excited by learning how science and engineering works. Doing a science project not only teaches you a lot, but it is a fun experience and leads to many opportunities.

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