



Prize Winner

**Multimedia
Year 11-12**

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WATER IN A GLASS TEST TUBE: ADHESIVE VS COHESIVE FORCES

Water. It comprises almost two-thirds of our bodies. It covers over two-thirds of the Earth's surface. By almost any measure, water is life.... and so much more. "Water in a glass test tube", is a film composed of over 300 pictures uncovering the molecular forces of water responsible for the formation of a concave meniscus in a glass test tube. It improves our scientific understanding of the adhesive and cohesive properties of water, which are the basis for so many biological processes, such as the movement of water from the roots to the top of trees and the drainage of tears from our eyes.

The pictures were taken with a SONY α6000 digital camera and composed with the computer program Adobe Premier Pro.

Through the creation of my film "Water in a glass test tube" for the 2020 Science Oliphant Awards I have been able to expand my scientific knowledge, develop my communication skills and challenge my technical capabilities. One of the greatest challenges I faced throughout the creation of my film was to ensure that all objects remained steady in the shot while I was making the stop motion portion of the film. There were several times when I had to re-shoot sections of my film as there were too many inconsistencies between pictures, resulting in disjointed transitions and loss of flow of movement of the inanimate objects. To ensure that I kept things as stable as possible, I ensured that I would film every day at the same time so that the lighting remained constant, and also used the same white backdrop. I planned out the whole length of the film using a story board.

A big challenge I faced at the beginning was to select the right topic for the film. I wanted to create the film around water and when undertaking my preliminary research, I found a lot of information about the characteristics and scientific understanding of water. Therefore, I was faced with the problem of deciding what aspect of water I wanted to discuss. However, this problem was quickly overcome when during a biology lesson I had poured water into a glass test tube and I saw the concave meniscus. This sparked my interest and I decided to investigate why water forms a concave meniscus. To help me understand the behaviour of water and its cohesive and adhesive forces, I did a number of experiments with different test tubes and different surfaces. The challenge of condensing my scientific understanding into a 3 minutes video clip I overcame by focussing on the most important aspects of what I had learnt.

Video link: <https://vimeo.com/436340808>

Password: oliphant2020

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