

Virtual Engineer-a-thon Activity Plan

Student Organization: AIChE

Title of Activity	Homemade Lava Lamps
Content of Subject Area	Fluid properties, attraction forces, reactions
Length of Video	10-15 min
Duration of Activity	<i>Include time estimates if possible</i>

****Safety protocols****

****Structure group to demonstrate diversity & inclusion****

****Credits/Subtitles****

<p>General Objectives</p> <p><i>Once clear sentence addressing the scope of the activity and how it relates to engineering or computer science</i></p>	<p>To discover and observe the basic scientific principles of density and polarity through the creation of a lava lamp.</p>
<p>Learning Outcomes</p> <p><i>What do you want students to know and be able to do?</i></p> <p><i>What knowledge, skills, strategies, and attitudes do you expect students to gain?</i></p> <p><i>What important math/science and engineering or computer science applications will students learn?</i></p> <p><i>What are the safety protocols you should take.</i></p>	<p>Describe how a lava lamp works in scientific language</p> <p>Be able to connect observations to scientific principles</p> <p>Density and Polarity are fundamental principles applied everyday in chemical engineering</p> <p>Safety: goggles, apron or old clothes, towels to immediately clean spills</p>
<p>Materials and Resources</p> <p><i>Provide a list of materials, people, and references</i></p>	<ol style="list-style-type: none"> <i>1) Flask, tall glass or jar</i> <i>2) Vegetable oil</i> <i>3) water</i> <i>4) Food Coloring</i> <i>5) alka-seltzer tablets</i>

<p>that 1) you used to create the activity; and 2) are required to teach the activity, including all physical materials, sources and resources outside the classroom</p>	<p>Resources: https://www.homesciencetools.com/article/how-to-make-a-homemade-lava-lamp-science-project/</p>
<p>Instructional Procedures</p> <p><i>Why should students care about this topic or activity? How does it help them learn about engineering or computer science?</i></p> <p><i>What "big" questions will generate discussion about this topic and what engineering, or computer science is?</i></p> <p><i>(Reference Grand Challenges when possible - tie back to earlier videos)</i></p>	<p>Procedure:</p> <ol style="list-style-type: none"> 1) fill flask most of the way w/ vegetable oil 2) Fill the rest of the flask with water. Stop and Observe the water going to the bottom <p>Key Question: Why do you think the water and oil do not mix when we put them together?</p> <ol style="list-style-type: none"> 3) Add drops of food coloring. Food coloring is water based so it sinks too 4) Break an alka seltzer tablet into a few pieces. and drop into the flask one by one. Stop and Observe <p>Key Questions: What did the alka seltzer tablet do?</p> <ul style="list-style-type: none"> - Mention reactions happening. Key question one introduces density. Key Question 2 introduces simple polarity - Mention simple example of both of these principles in the context of engineering