



**CALIFORNIA STATE SCIENCE FAIR
2013 PROJECT SUMMARY**

Name(s) Vanessa Sun	Project Number J0616
Project Title Floating Needles	
<p style="text-align: center;">Abstract</p> <p>Methods/Materials</p> <p>I found that my hypothesis was correct. The densities of the liquids do relate to the surface tension; the denser the liquid, the greater the surface tension. For example, the density of the hand sanitizer had a higher density than the density of water, so more needles were able to float on the sanitizer's surface. However, I also learned something unexpected -- 7-Up would sizzle when it touched the tissue paper and make air bubbles in the tissue paper; the paper wouldn't break and I had to pop the air bubbles. During the entire experiment I learned a lot about surface tension. Before, I was quite confused with the concept. However, doing this experiment has cleared things up for me, and I have learned how to measure water tension easily and in an interesting way. I had never thought about needles floating in different liquids; I always thought that needles could float on any type of liquid, but I have learned that they're successful floatation depends on the density of the liquid and that the liquid can't be acidic. I also had to make sure that the water was at room temperature, and unfortunately, I only had one bowl at that time, so every time I finished testing a liquid I had to wash the bowl and make sure no oil was left inside, because that might affect the testing of my other liquids. I think that in the future I can improve my experiment by doing multiple trials to make sure my information is accurate, and perhaps use smaller needles. I should also use a bigger variety of liquids with more extreme densities and check what the needles are made of. Lastly, I should try the liquids at a different temperature, and not limit the liquids to only room temperature.</p> <p>Conclusions/Discussion</p> <p>I found that my hypothesis was correct. The densities of the liquids do relate to the surface tension; the denser the liquid, the greater the surface tension. For example, the density of the hand sanitizer had a higher density than the density of water, so more needles were able to float on the sanitizer's surface. However, I also learned something unexpected -- 7-Up would sizzle when it touched the tissue paper and make air bubbles in the tissue paper; the paper wouldn't break and I had to pop the air bubbles. During the entire experiment I learned a lot about surface tension. Before, I was quite confused with the concept. However, doing this experiment has cleared things up for me, and I have learned how to measure water tension easily and in an interesting way. I had never thought about needles floating in different liquids; I always thought that needles could float on any type of liquid, but I have learned that they're successful floatation depends on the density of the liquid and that the liquid can't be acidic. I also had to make sure that the water was at room temperature, and unfortunately, I only had one bowl at that time, so every time I finished testing a liquid I had to wash the bowl and make sure no oil was left inside, because that might affect the testing of my other liquids. I think that in the future I can improve my experiment by doing</p>	
Summary Statement How the densities affect the surface tension of different types of liquids.	
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