



**CALIFORNIA STATE SCIENCE FAIR  
2016 PROJECT SUMMARY**

<b>Name(s)</b> <b>Joseph Kuruvilla; Lizbeth Kuruvilla</b>	<b>Project Number</b> <b>J0622</b>
<b>Project Title</b> <b>Will Adding Corn Syrup or Glycerin Improve a Mixture of Bubble Solution?</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The objective of this study is to determine if glycerin or corn syrup will improve a regular mixture of bubble solution by making a better bubble. We will be observing the changes and seeing if there is a longer/shorter duration or an increase/decrease in size.</p> <p><b>Methods/Materials</b> Three mason jars with lids for the three solutions, measuring cup and tablespoon to have an equal measurement for each solution, spoon and a bowl to help with the mixing, Dawn Ultra dishwashing soap, Refreshed distilled water, Karo light corn syrup, Top Care glycerin are the ingredients for the solutions, pipe cleaners for bubble wands, red Sharpie marker to label the three mason jars, a stopwatch with 0.01-second accuracy to measure the duration of the bubbles from each solution, and a notebook to record observations.</p> <p><b>Results</b> In conclusion, adding corn syrup or glycerin will improve the mixture of a bubble solution and our hypothesis was correct. In fact, glycerin beat corn syrup. But, they both did better than just detergent and water (Solution # 1). We conducted this experiment outside and it was cool weather. Although it took some tries, we were still able to get accurate results. Depending on the weather conditions, there will be changes in the way the bubbles last. We really did enjoy this experimental procedure because it is a unique way of discovering and exploring. This experiment provided us with accurate results and it also completed our hypothesis. It showed a great contrast among Solution # 1, Solution # 2, and Solution # 3. To sum it up, glycerin would do the right job to improve a mixture of bubble solution that you bought at a store.</p> <p><b>Conclusions/Discussion</b> Well, surface tension is the key secret for bubbles. According to Kid's Blog, surface tension can be referred to as #the elastic skin# or #the forces holding the molecules together,# according to Scientific American. Have you ever wondered why mixing water to make bubbles doesn't quite work? This is because the surface tension is high, making the bubbles pop. On the other hand, if you mix detergent, corn syrup, or glycerin, the surface tension is low, making the bubbles last longer. To sum it up, you can see how just plain water has a lower surface tension, which is why it's hard for big bubbles to form and the duration of the bubble is short. This expanded our knowledge of chemistry because it showed how two homemade formulas can make a difference.</p>	
<b>Summary Statement</b> We found out that bubble solutions with corn syrup and glycerin are better than a regular bubble solution, but the solution with glycerin is the best out of all.	
<b>Help Received</b> Thanks to Science Buddies for helping us to find a topic for our science fair project. The website helped guide us with our experiment and gave us creative ideas for the project. It also had already laid out the basic outline and we had to plan and create. We also want to thank our parents for buying the supplies in	