



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Apollo Nestoras	Project Number S0512
Project Title Minimizing Surface Tension of Water	
Objectives/Goals My project was to determine whether the type of water and its temperature affects the ability of a surfactant to reduce surface tension. I believe that if hot salt water is combined with a detergent, then it will yield the least amount of surface tension. Methods/Materials A single beam balance was constructed and used to determine the amount of force necessary to make a needle break free from the surface tension of the water being measured. Distilled, tap, and salt water were evaluated at various temperatures both with and without detergent. Each experiment was repeated ten times. Results The use of a surfactant reduced the surface tension by about 40%. Also, the higher the temperature of the water, the lower the surface tension. Hot water and detergent combined produced lower surface tension. Surprisingly, though, hot distilled water without detergent yielded the least amount of surface tension. Conclusions/Discussion My conclusion is that surface tension is best minimized with the combination of high water temperature and the use of a detergent. Furthermore, the use of hot distilled water, since it is free of minerals and additives, does not need the use of a detergent to minimize surface tension.	
Summary Statement My project is about determining whether detergents, water temperature, or type of water has the most influence in reducing surface tension.	
Help Received None	