



CALIFORNIA SCIENCE & ENGINEERING FAIR 2018 PROJECT SUMMARY

Name(s) Faith A. Inverary	Project Number 38398
Project Title Investigation of Specular Mediums and Their Effects on the Internal Temperatures of Solar Cookers	
Abstract Objectives/Goals Solar cooking has shown to be an effective way to alleviate food and unclean water situations, giving people a way to cook their food and pasteurize their water. This project is attempting to find a reflective material that would effectively increase the internal temperature of a solar cooker. Methods/Materials 4 16x12x12 boxes, 4 12x10x10 boxes, two large oven bags, Mylar film, aluminum foil, white semi-gloss paint, foil tape 5 thermometers, access to direct sunlight, computer paper (for insulation) Cardboard boxes, different specular materials, paper insulation, and tape was used to create four solar cookers. The design was a combined attempt for a panel and box cooker. Each cooker either contained aluminum foil, Mylar film, white semi-gloss, or foil tape as the internal reflector. The four solar cookers were placed outside for three hours, each cooker containing a digital thermometer within. Every hour within the three-hour period, the temperature in each cooker and the temperature of the external environment would be recorded. Results My hypothesis that Mylar film would be the most effective in raising internal temperatures was correct. My results show that Mylar was the best material in Trial 1, 2, 4, and tied with foil tape in Trial 5. Aluminum foil and foil tape were on-and-off tied for the second highest throughout the trials, while white paint was consistently the lowest temperature. Conclusions/Discussion These results contribute to the building efforts of giving struggling communities a way to cook their food and pasteurize their water. Solar cookers are a simple way to prevent more disease and feed more people. It can also be used by people trying to lower their electricity and heat usage by using solar cookers. In the future, I could try to regulate external temperature of the solar cookers, so my results would be more consistent. I could also try to test which clear material would be more effective on the solar cooker instead of oven bags.	
Summary Statement My project is investigating the effects of four different reflective materials on the internal temperatures of solar cookers, to aid efforts in the solar cooking communities.	
Help Received The creation of the solar cookers and the experiment was performed with my own knowledge and help. However, my biology teacher, Ms. Palma, aided me with creating the project concept. My STEM advisors, Ms. Deragisch and Dr. Auld, also aided me with advice on how to improve my experiment with	