



**CALIFORNIA STATE SCIENCE FAIR
2011 PROJECT SUMMARY**

Name(s) Rebecca M. Sine	Project Number 31959
Project Title Crazy Crystals: In Which Temperature Condition Do Crystals Grow Largest and Clearest?	
Objectives/Goals In my science fair project, I tested which temperature condition crystals grow the biggest and clearest in. The temperature conditions I used were an ice bath (4° C), a refrigerator (10° C), and room temperature (22.22° C). My hypothesis was that the crystals that grew at room temperature would grow the largest and clearest, based on my research. Abstract Methods/Materials The crystals are formed by recrystallization and are made from a supersaturated solution of borax powder and water (with a ratio of 60 grams of borax for every 235 ml. of water in each cup the crystals were grown in). So I made the borax solution by boiling the water so that more borax would dissolve in it than at a cooler temperature. Then equal amounts of solution was poured into the cups, and then placed in the three different temperature conditions. Results The solutions cooled in the ice water grew many small opaque crystals; the ones cooled in the fridge grew bigger in size, clearer in transparency, and formed a more recognizable cube shape. Finally, the solutions cooled at room temperature grew the best of all, with a large, clear, and hard structure. Conclusions/Discussion This shows that crystals grown from a solution need to be cooled slowly, not quickly, in order to grow large and clearly. My hypothesis was right. A real-life application of my project could be to show people how to make large and sweet sugar crystals (rock candy) and other crystals by performing recrystallization at a warm temperature. Scientists also use this method to obtain a desired substance from a solution, which is also called purification.	
Summary Statement I will test in which temperature condition do borax crystals grow the largest and clearest.	
Help Received Mrs. Buck gave advice.	