CALIFORNIA STATE SCIENCE FAIR
2012 PROJECT SUMMARY

Name(s)
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Project Number
J0613

Project Title
Amateur Studies in Polymer Construction

Abstract

Objectives/Goals
The objective of my experiment was to determine if common household items such as flour, maseca, gelatin, and cornstarch can be substituted in place of borax in a polymer recipe. If they can, then how much of that item is needed to make a polymer and how does it compare to the original borax polymer.

Methods/Materials
The materials I needed for my experiment include:
10 large styrofoam cups
10 stirring spoons
5 bottles of Elmer's School Glue(4oz.)
Measuring cup
Teaspoon
Large bowl
Meter stick
Wax paper
Video camera
One teaspoon each of flour, Maseca, cornstartch, and gelatin

Results
None of the items that I tested made a polymer that had comparable properties to the borax polymer. None of the test polymers set up like the borax polymer. They were all thick, white liquids, too viscous to be considered a polymer.

Conclusions/Discussion
None of my items succeeded in making a polymer similar to the borax polymer. However, maybe if I use a different method or even try different amounts of each material then they might form polymers. My theory is that maybe the reason that the materials didn't work is because, unlike the borate ions in borax, the other materials don't conatin anything that has the ability to cross-link the polyvinyl acetate molecules inside the glue with the H2O molecules in the water. These long chain molecules are what give polymers their properties.

Summary Statement
I wanted to determine if common household materials can be used to construct a polymer with similar properties to a borax polymer.

Help Received
Mrs. Villsenor and Mr. Ramirez helped me by taking me to the competitions and with completing my application for the competions; My parents helped me with tranportaion to the stores and to the mentor meeting; The Kern County LIbrary helped with some of my research; Used the computers at Mountain