



**CALIFORNIA STATE SCIENCE FAIR  
2003 PROJECT SUMMARY**

<b>Name(s)</b> <b>Beyang Y. Liu</b>	<b>Project Number</b> <b>J0514</b>
<b>Project Title</b> <b>Viscosity: A Sticky Situation</b>	
<b>Objectives/Goals</b> My investigative question was "Does xanthan affect water viscosity?" The goal of this experiment was to find if and how xanthan gum affects water viscosity and how this information can be applied to food applications such as soup, ice cream, and salad dressing.	
<b>Abstract</b> <b>Methods/Materials</b> Methods: a.6 cups were labeled 0%, 0.2%, 0.4%, 0.6%, 0.8%, and 1% b.Fill cups with water equal to the following mass: 100g minus percentage shown on cup c.Cups were one-at-a-time microwaved for 20 seconds and then placed on the magnetic stirrer platform. xanthan gum was dispensed into the cup according to the label on the cup (i.e. 0.6% cup gets 0.6 grams of xanthan gum dispensed in it), dissolving the xanthan gum. This step was repeated for all cups. d.Cups were allowed to cool to room temperature overnight. e.The solutions were tested using the viscometer and results were recorded. Then, the data recorded was multiplied by the correct conversion factor on the conversion table.  Materials 1 Viscometer 1 Viscometer spindle 1 Metric scale 3 Plastic spoons 9g xanthan gum 1 Microwave 1,950g Distilled water 1 Viscometer conversion table 1 Magnetic stirrer 20 Plastic cups	
<b>Results</b> Xanthan gum increased water viscosity. The graph of viscosity plotted against amount of xanthan gum was a cubic function, curving upward at first and then flattening out.	
<b>Conclusions/Discussion</b> Xanthan gum is a very good viscosity-increasing agent. At just 1% concentration, it produced a solution similar to glue or silly putty. The graph, however, was not curving upward; it was a cubic function. This means that after 0.8% concentration, xanthan gum does not increase viscosity as much for every extra particle added. This is most likely attributed to 2 things: xanthan gum's maximum concentration at that temperature was between 0.8% and 1% or that my stirring methods were slightly flawed and not all of the xanthan gum was dissolved.	
<b>Summary Statement</b> This project was designed to determine xanthan gum's effect on water viscosity.	
<b>Help Received</b> Dr. Liu trained me in the use of lab equipment at ConAgra Foods, Inc.	