



**CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY**

Name(s) Losmeiya Huang; Colleen Tan	Project Number S0506
Project Title Comparing Two Recipes of Biodiesel in Terms of Flashpoint, Water Content, and pH	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals Determining which catalyst used in soybean-based biodiesel will produce the most feasible fuel.</p> <p>Methods/Materials We are testing the two recipes in terms of flashpoint, water content using a Karl Fischer titrator, and pH. Titrations on virgin soybean oil are conducted prior to the process to determine the composition of catalyst for the reaction. After completing the purification process, the pH level is taken and samples are taken to complete Karl Fischer and flashpoint tests. Hydrometer tests are run at the end of the process to verify that biodiesel has been created.</p> <p>Results Using potassium ethoxide creates a more feasible, but is more sensitive than sodium methoxide. More catalyst is required in order for the potassium ethoxide reaction to proceed. On average, our test results show that the two fuels are similar in quality in terms of flashpoint, pH, and water content. With similar quality, the potassium ethoxide is a more feasible fuel since ethanol is a renewable resource.</p> <p>Conclusions/Discussion Despite the fact that more potassium ethoxide is needed as a catalyst in soybean-based biodiesel, the renewable resource of ethanol as a component in this catalyst and the similar quality of fuel displays that soybean-based biodiesel created with potassium ethoxide is more feasible.</p>	
Summary Statement We are conducting a comparison study between two catalysts used in creating soybean-based biodiesel fuel.	
Help Received Used lab equipment at Innovative Organics under supervision of Doug Ward, used lab equipment at Gabrielino High School under supervision of Michael Winters	