



**CALIFORNIA STATE SCIENCE FAIR
2013 PROJECT SUMMARY**

Name(s) Andrew M. Chen	Project Number S0907
Project Title Utilizing Novel Graphene Oxide Langmuir-Blodgett Film Catalysts to Enhance the Cost Efficiency of a PEM Fuel Cell	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals Using graphene oxide to improve power output of a PEM fuel cell.</p> <p>Methods/Materials Graphene oxide was created using the Hummer's method and thin films were created on the polymer electrolyte membrane using an LB trough. Power output testing was done with new membranes. Characterization tests included AFM, TEM, and FTIR.</p> <p>Results The new membrane improved power output by 106%.</p> <p>Conclusions/Discussion The results verified the hypothesis and have potentially opened a new direction for research.</p>	
Summary Statement Using graphene oxide to increase power output of a PEM fuel cell.	
Help Received Used lab equipment at Stony Brook university under supervision of Dr. Rafailovich; participant in Garcia MRSEC program	