



**CALIFORNIA STATE SCIENCE FAIR  
2005 PROJECT SUMMARY**

<b>Name(s)</b> <b>Sarkis Bornazyan</b>	<b>Project Number</b> <b>J1504</b>
<b>Project Title</b> <b>The Effect of Bottom Reflectivity on Solar Pond Performance</b>	
<b>Abstract</b> <b>Objectives/Goals</b> My 2004 "Solar Energy Trap" project studied solar ponds as an energy collector and storage system combined. I effectively proved that by creating salinity gradient body of water we could store and reuse solar energy for our needs. One of the unanswered questions was the effect of bottom reflectivity on solar pond performance. My 2005 project experimentally investigates this subject. After researching, I hypothesize that decreased reflectivity of the bottom surface of the salinity gradient container will result in the greatest thermal storage efficiency. <b>Methods/Materials</b> Solar pond-like vertical salinity gradient was created in the container and exposed to halogen lamplight (sunlight simulator). High absorptive, medium absorptive and high reflective bottom cases were observed. Effects were evaluated by measuring and calculating difference in temperature between bottom and top layers of water as function of light exposure time. <b>Results</b> In the high absorptive case, the bottom temperature increased and exceeded top about 6 hours sooner than in the medium case and about 12 hours sooner than in the high reflective case. In the high reflective case bottom temperature never exceeded top. <b>Conclusions/Discussion</b> In the high absorptive case, the temperature increased more efficiently than in the medium and high reflective cases, indicating high thermal conversion efficiency for the first case. The data supported the hypothesis and findings agree with the information that is found in the literature and the El Paso Solar Pond research and development project results.	
<b>Summary Statement</b> By creating high absorptive surface at bottom of solar pond-like environment, it was shown that the sunlight, a renewable energy source, could be more effectively converted into thermal energy and stored for future needs.	
<b>Help Received</b> Consulting, transportation to obtain necessary materials and literature.	