



California Science Center
CALIFORNIA STATE SCIENCE FAIR
2001 PROJECT SUMMARY

Your Name (List all student names if multiple authors.) Jessica K. Ingalls	Science Fair Use Only <h1 style="margin: 0;">J0615</h1>
Project Title (Limit: 120 characters. Those beyond 120 will be ignored. See pg. 9) Solar Cells: Can Amorphous Outperform Polycrystalline In Low Sunlight Conditions	Division J Junior (6-8) J Senior (9-12)
Preferred Category (See page 5 for descriptions.) 14 - Physics & Astronomy	
Abstract (Include Objective, Methods, Results, Conclusion. See samples on page 14.) Use no attachments. Only text inside these boxes will be used for category assignment or given to your judges.	
<p>Purpose: The purpose of this project was to see if an amorphous silicon photovoltaic cell would produce more power than a polycrystalline silicon photovoltaic cell in low-sunlight conditions.</p> <p>Results: In nearly all instances, including cloudy, dusty and smoky conditions, the polycrystalline silicon cell produced more power than the amorphous silicon cell. The only exception was late in the afternoon, when the amorphous silicon cell produced slightly more power than the polycrystalline cell.</p> <p>For comparison, the researcher tested both cells under incandescent light, fluorescent light, in the shade and inside a car, and here the amorphous silicon cell performed much better than the polycrystalline cell.</p> <p>Conclusions: The researcher's hypothesis was proven wrong. Even though the amorphous silicon cell produced more voltage than the polycrystalline cell, the latter type of cell produces more power under nearly all conditions, and this power is what is converted to electricity. The one reading in which the amorphous silicon cell produced more power may have been an error or an anomaly, and in this reading neither cell produced much power.</p> <p>Applications: If amorphous silicon PV cells did actually produce slightly more power under low sunlight conditions, since these cells are cheaper to produce, they might be a better choice in some circumstances than polycrystalline cells, which are more expensive to manufacture. Unfortunately this did not turn out to be the case.</p>	
Summary Statement (In one sentence, state what your project is about.) Can a less efficient but cheaper solar cell outperform a more efficient, more expensive solar cell under low sunlight conditions?	
Help Received in Doing Project (e.g. Mother helped type report; Neighbor helped wire board; Used lab equipment at university X under the supervision of Dr. Y; Participant in NSF Young Scholars Program) See Display Regulation #8 on page 4. Curtis Parker and Edward Stacy of Diversified Power Systems in Santee answered many questions and provided one of the photovoltaic cells used in this project; my father, Richard Ingalls, helped me think of a specific project idea and helped me design the testing console; my mother, Diane Ingalls, helped find information and edited my report.	