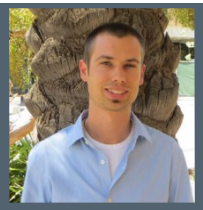
ASU LightWorks
ARIZONA STATE UNIVERSITY
Light-Inspired Solutions

The Team

"High utilization of renewable energy is a vital component of our energy portfolio. "Full-Spectrum Optimized Conversion and Utilization of Sunlight", could pave the way for cost-competitive hybrid solar energy systems that combine the advantages of existing photovoltaic (PV) and concentrated solar power (CSP) technologies."

- FOCUS Program



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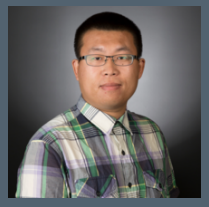

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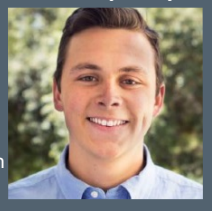

Jeffery Mrkonich

PVMirror

A New Tandem Approach

High-efficiency solar power with intregrated storage

Arizona State University has developed a new model for the American research university, creating an institution that is committed to excellence, access, and impact. ASU pursues research that contributes to the public good, and ASU assumes major responsibility for the economic, social, and cultural vitality of the communities that surround it.
www.asu.edu

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LightWorks is an Arizona State University initiative that inspires and develops ways to revolutionize the use of energy and the large scale conversion of sunlight, carbon dioxide and water into useful products. We support creation of new industries not just to power the world, but to empower it; not just to create wealth for a few, but to enrich people's lives everywhere; not just to light an energy revolution, but to enlighten communities across the globe; not just to achieve energy security but to secure energy justice.
www.asulightworks.com

The **PVMirror Project** is collaborative effort between the Holman Research Group and the Defect Lab at ASU and the Mirror Lab at the UA.

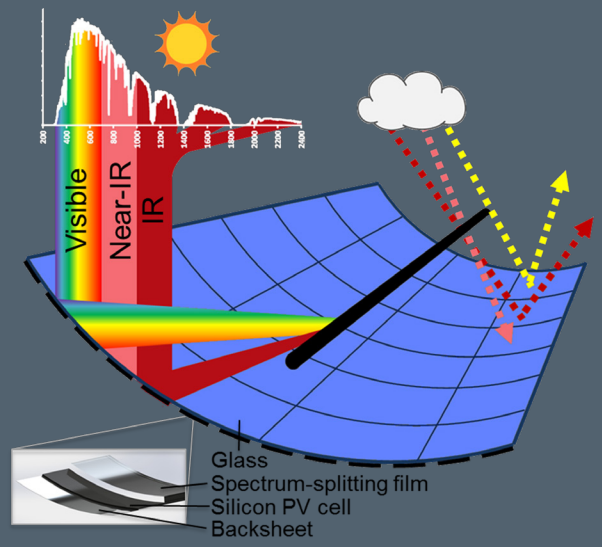
PV/CSP Hybrid

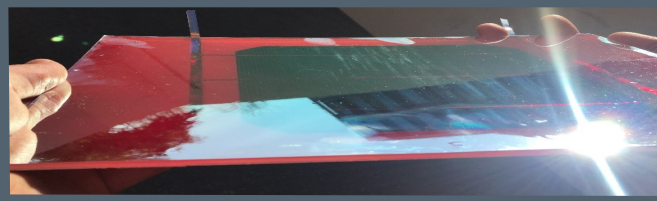
What:

PVMirror is a hybrid solar power plant technology combining the high efficiency of photovoltaics (PV) with the energy storage benefits of concentrating solar thermal power (CSP).

How:

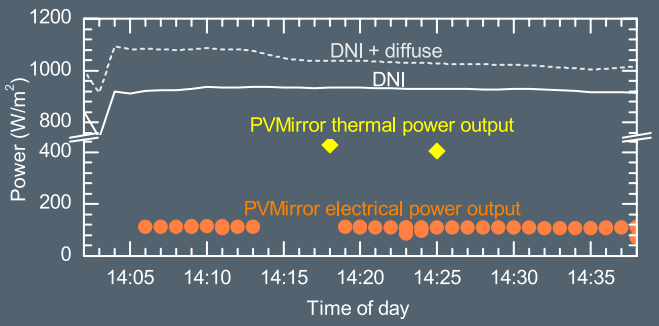
A spectrum-splitting film directs the solar spectrum to the location of best use; NIR photons are converted to electricity by PV cells; VIS & IR photons are converted to heat at the receiver.





Why:

- **50% higher annual energy output than trough CSP ; 15% higher output than PV**
- **50% of the generated electricity can be stored and dispatched in the evening when demand is high**
- **30% lower LCOE than trough CSP**
- **Diffuse light is collected by PV cells broader geographical use than CSP**



Measured outdoor performance of a Prototype I PVMirror. 11% of the incident light is converted to electricity; 45% is converted to heat.

Holman Research Group

UA SCIENCE
RICHARD F. CARIS MIRROR LAB
Steward Observatory

DEfECT laboratory