



University of Arizona Solar Energy Network

The University of Arizona Solar Energy Network illustrates the outstanding research conducted at the university and provides an access point and information hub linking the science and innovation to academia, industry, government, and the public. Solar energy research at the University of Arizona is pursuing innovative solutions to real-world energy problems by:

- Advancing solar technologies in nano-composite thin-film photovoltaics, high-concentration photovoltaics for large-scale solar farms, organic and organic-inorganic hybrid materials and many more.
- Improving how energy is stored and distributed through innovative storage technology systems and increased efficiency in solar-integrated buildings and vehicles.
- Creating demonstration sites that combine applied energy systems and measurements with renewable energy electricity delivery and industrial collaboration.
- Developing platforms for collaborations between science and technology research and economic analysis for policy development.

UA SEN connects the research and educational efforts at the university to a broader audience through sponsored events and a web site.

Research, Development and Demonstration at the University of Arizona in Solar Energy



Arizona Research Institute for Solar Energy

AZRISE, a global institute at the University of Arizona, creates multi-disciplinary partnerships that integrate research, economics, public policy and education. Spanning academia, industry and government, these partnerships are creating the solar energy innovations essential to securing a sustainable future. The Institute provides strategic directions that:

- Transform science into large and small-scale solar energy solutions that are demonstrable and can transform individual lives.

The Arizona Research Institute for Solar Energy

www.azrise.org

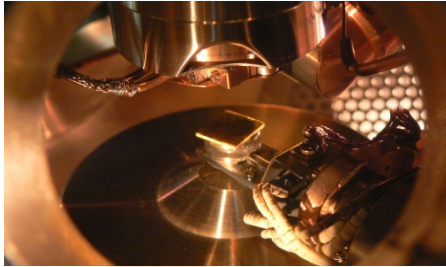
- Seed innovations that drive economic growth and environmental health;
- Foster multidisciplinary approaches that translate and expedite ideas born in research labs into marketplace solutions.
- Inspire innovations that form large-scale storage solutions to smaller scale applications like fully sustainable homes and solar-fueled cars.



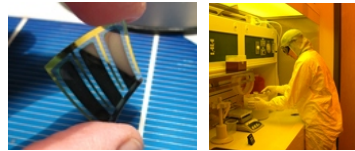
UA Emerging Solar Energy Research Highlights

University of Arizona solar research supports over 75 research projects in some of these focus areas:

- High concentration photovoltaic systems
- Sunlight collection and concentration
- Photovoltaic research and measurements
- Photovoltaic materials studies
- Optical concentrators



EFRC: Center for Interface Science: Solar Electric Materials CIS:SEM



CIS:SEM is one of 46 Energy Frontier Research Center (EFRC) programs created in 2009 by the U.S. Department of Energy to focus on the basic science necessary to create abundant, clean, and economical energy technologies for the 21st century. The University of Arizona, the lead institution for CIS:SEM, and its partners from the Georgia Institute of Technology, the University of Washington, Princeton University and the National Renewable Energy Laboratories (NREL), are engaged in a five-year, \$15M effort. CIS:SEM is focused on basic science issues that will lead to understanding, controlling, and improving interfaces in Generation III photovoltaic platforms based on organic and organic-inorganic hybrid materials. The center also supports the Energy Science Group, organized by graduate students to encourage interdisciplinary discussion and share knowledge about energy science.

<http://solarinterface.org> Director: Neal Armstrong, Professor Chemistry and Optical Sciences

<http://energysciencegroup.ning.com>

Biosphere 2

Biosphere 2 serves as a center for research, outreach, teaching and life-long learning about Earth, its living systems, and its place in the universe. It works to catalyze interdisciplinary thinking and understanding about Earth and its future; be an adaptive tool for Earth education and outreach to industry, government, and the public; and distill issues related to Earth systems planning and management for use by policymakers, students and the public.

In solar energy, Biosphere 2 is exploring viable locations for large-scale solar deployment through partnerships with Solarmax Arizona to pilot a novel approach to mounting photovoltaic (PV) solar panels on steep, unstable, slopes. This is the first known installation of rigid PV modules mounted to geosynthetic membranes commonly used to cover mine tailings and landfills. In addition, Biosphere 2 is experimenting with novel mounting systems by using PV panels donated by the SOLON Corporation (Tucson, AZ).

www.b2science.org

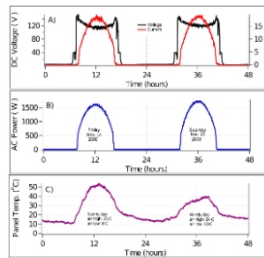


UA Emerging Solar Energy Research Highlights

- System studies
- Water and renewable energy analysis
- Energy storage research
- Efficiency and solar-integrated building technology design



Tucson Electric Power (TEP) Solar Test Yard



The Tucson Electric Power (TEP) solar test yard, a collaboration between TEP and university researchers, studies the performance of more than 600 photovoltaic modules from 20 different manufacturers, with 23 inverters in strings similar to residential systems. This diverse set of PV hardware supplies 90 kW_{peak} to the grid.

Research studies focus on three major programs: (1) solar PV performance at the TEP Solar Test Yard with real-time recording and display of energy production, (2) evaluation of the increased energy production in Tucson from single-axis tracking PV, and (3) the development of plans to build a Tucson-based integrated solar demonstration facility that combines solar energy generation using single-axis tracking PV with energy storage using batteries and compressed air energy storage and with direct load control at the utility.

www.uapv.org

www.azrise.org

UA Science and Technology Park and Solar Zone



The University of Arizona Science and Technology Park "Solar Zone" serves as an interdisciplinary and collaborative hub for researchers and industry to develop and promote renewable energy. The zone is dedicated to the creation of a competitive environment for companies in the sector to roll out current and create next generation new energy products, attract key suppliers and attract/grow talent in order to promote industry success and advancement. Companies work not only on their own business interests but also team with the Tech Park and key regional partners to influence the solar strategy of the region. Bell Independent Power Corp. is a developer of Thermal Storage Technology for Concentrated Solar Power (CSP). Bell has chosen the UA Tech Park as the site of a new state of the art 5-MW solar plant with a Thermal Storage System.

www.uatechpark.org





Student-led Projects

The Sage Fund

The SAGE Fund raises seed money to fund cost-saving projects that increase the environmental sustainability of the University of Arizona. The student-led organization creates a strong business case for and then works to implement environmentally sustainable programs and projects. Sage Funding is derived from local business partnerships and through donations that are administered by a diverse committee of students, faculty, and staff. The SAGE Fund takes pride in funding projects that enhance the education of students and help to create a better campus for years to come.

<http://sagefund.arizona.edu>

UA Solar Racing Car

AzRISE takes great pride in its Solar Car Team, which achieved 3,149 miles to the gallon with their urban prototype car "Mallory," in Houston, Texas, at the 2010 Shell EcoMarathon. The UA student team proudly exhibited an urban concept car that ran on a hybrid solar/battery fuel system. The car, which is a visible demonstration of solar energy's potential to transform lives, posted a fuel efficiency equivalency of 700 miles per gallon and increased that to a best of more than 3,149 miles per gallon.

www.solarcar.arizona.edu



For more information on solar energy research projects at the University of Arizona please contact:
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www.azrise.org

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