

January 29, 2010

Dear Board Member,

To begin the new year, I am pleased to welcome our newest Board member, Craig Cogut, co-managing Partner/Founder of Pegasus Capital Advisors. You can learn more about Craig [here](#). Craig will be an invaluable addition to the ASU Board of Trustees for Sustainability. Following the brief list of select news and activities, you will hear from Professors Christiana Honsberg and Stuart Bowden, two of the world's leading researchers developing ultra-high efficiency solar cells.

Highlights of ASU's sustainability activities

- The School of Sustainability, working in conjunction with the Peace Corps, has launched a new master's degree in sustainability that allows graduate students to integrate their graduate degree with overseas service. Students will complete initial coursework at ASU, develop a master's project during two years of service as a Peace Corps volunteer, then return to ASU to complete their degree program. [Read more.](#)
- Decision Center for a Desert City researchers Patricia Gober and David A. Sampson won a grant from the National Commission on Energy Policy, established by the William and Flora Hewlett Foundation, to assess the vulnerability of water and electricity supplies under future scenarios of population growth and climate change. Working in collaboration with colleagues from Portland State University, the researchers will initially focus on the Phoenix metropolitan area with a goal to develop predictive models for application elsewhere. [Read more.](#)
- Global Institute of Sustainability's director of research development, Matt Fraser, worked with RSC Equipment Rental to verify software developed by the company for tracking greenhouse gas and air pollutant emissions. The company, which is a leading provider of equipment for construction and other industries, uses the software to determine the environmental footprint of every piece of equipment it rents and provides this information to corporate clients to help them mitigate their impacts and promote sustainability. [Read more.](#)
- The Aspen Institute's Center for Business Education has granted its 2009 Faculty Pioneer award to Jay Golden, assistant professor in the School of Sustainability and affiliate professor in the School of Sustainable Engineering and the Built Environment. This award, called the "Oscars of the business school world" by *The Financial Times*, honors professors who have demonstrated leadership and risk-taking in integrating ethical, environmental, and social issues into the MBA curriculum. [Read more.](#)
- The Robert Wood Johnson Foundation has awarded a grant to Decision Theater's research director, Tim Lant, and James G. Hodge Jr., the Lincoln Professor of Health Law and Ethics at the Sandra Day O'Connor College of Law, to examine how legal decisions affecting public health issues are made in emergencies such as an H1N1 flu pandemic. The goal is to improve critical legal choices and boost protection of public health. [Read more.](#)
- The 2009 Greenbuild International Conference and Expo named ASU's unique carbon neutral display booth made of recycled steel, solar panels, and live plants a winner of the Green Exhibitor Performance Award. See a behind-the-scenes glimpse of how students and faculty constructed the exhibit and transported it by light rail [here](#).

You can reach me at rob.melnick@asu.edu or 480-965-5233 with any questions or comments about this briefing. The interview with Dr. Honsberg and Dr. Bowden follows on page two.

Best regards,



Rob Melnick
Executive Dean

cc: Jim Buizer, Teresa Forst

Q&A with Christiana Honsberg and Stuart Bowden

Designing transformational solar cells

Professors Christiana Honsberg and Stuart Bowden are the leaders of ASU's Solar Power Lab. Honsberg is chief scientist of the lab and is considered a pioneer in photovoltaics. Bowden heads the industrial collaboration section of the lab and is credited with improving the efficiency of silicon and crystalline silicon solar cells and the cell manufacturing process.

At what point did “sustainability” become part of your research focus?

When we became involved in photovoltaic research in the mid-1980s, the quest for solar energy had already been driven up by the 1970s oil crises and then redirected toward space applications as oil prices returned to low levels. Nevertheless, we always expected that when the technology became cheap enough, solar power would provide electricity in underdeveloped countries. The Kyoto Protocol in 1997 became a turning point for us because it highlighted world sustainability issues and prompted many highly developed nations to deploy photovoltaic systems. This has led to increased research focus over the past decade on photovoltaic materials and their impacts.

What are your most important sustainability-related research projects?

In one project, we are working to overcome current barriers to the production of very thin, high efficiency solar cells. Such a breakthrough will stimulate rapid improvements in existing commercial solar cell technology, reduce solar cell costs, and increase their use. Our goal is to put solar cells on a track analogous to what Moore's Law describes for computers — geometrical growth over time.

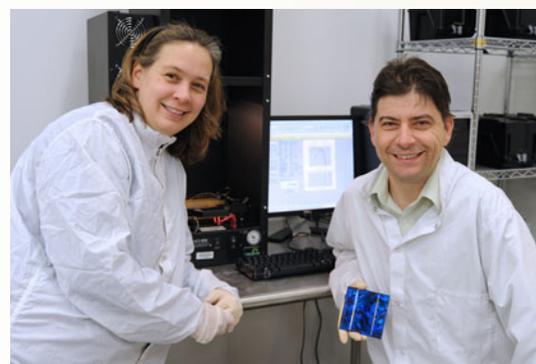
In a second project, we are developing ultra-high efficiency solar cells that will exceed existing efficiency limits of about 30 percent for non-concentrated sunlight and 45 percent for concentrated. Because we are using new approaches, such as exploiting the efficiencies of so-called “intermediate band material,” we expect to dramatically reduce the cost of materials and production while increasing power output. These new cells can literally transform our energy system by opening practical new applications for solar power that range from hydrogen fuel production to “smart windows” — glass that controls the amount of heat transfer in response to conditions.

How will your research affect future policy decisions?

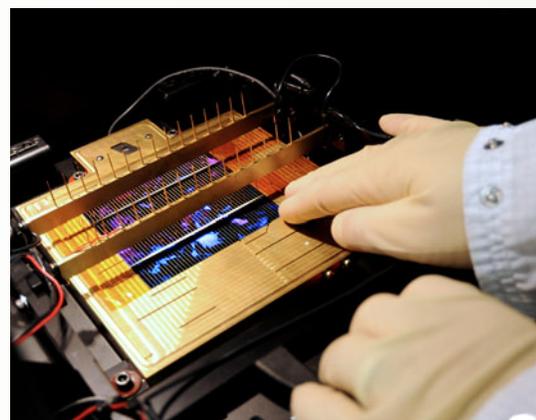
Both of our projects make solar cells better and more affordable, which should increase the ability of policymakers to meet greenhouse gas emission targets. Our ultra-high efficiency solar cells, however, will take us even farther than that. We envision a future in which we no longer plug most of our devices into distant power-generating sources, but instead let them generate and store their own power from available sunlight.

What is the world sustainability challenge that concerns you most?

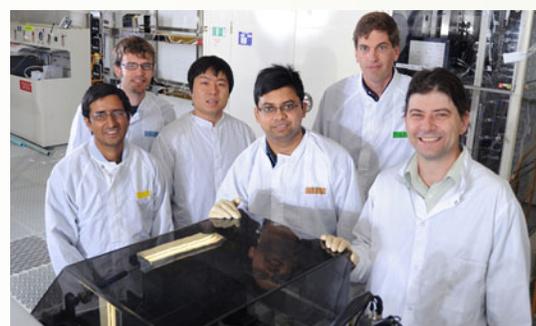
We are most concerned about the world's growing need for affordable, sustainable energy. This is a matter of environmental, economic, and social concern for both rich and poor countries.



Honsberg and Bowden in the the Solar Power Lab's clean room



A newly designed solar cell ready for testing



Bowden with members of the Solar Power Lab research team