Trustee makes donation to start new solar energy research center at Rensselaer

October 31 2008

Thomas R. Baruch, a member of the Rensselaer Polytechnic Institute Board of Trustees and alumnus of the Class of 1960, has donated a gift that will help to establish a new center at the Institute devoted to bio-energy research. The new center — the Baruch '60 Center for Biochemical Solar Energy Research — will conduct unprecedented research on biochemical solar technology.

Researchers at the center will work to develop the next generation of solar technology by studying one of the most powerful energy converting machines in world – plants. Researchers will use sophisticated new technologies and techniques to understand the energy converting power of plants to develop new technologies that mimic this extremely efficient natural system.

"We are grateful to have a partner in Tom Baruch who fully understands the vision of The Rensselaer Plan, and the pressing need to pursue visionary and innovative efforts to develop new approaches to energy security around the world," said Rensselaer President Shirley Ann Jackson. "The center will expand the energy research network that Rensselaer is actively building across the Institute, and will offer researchers around the globe fundamental scientific research on the original solar panel – plants – as well as technological solutions to create the super-efficient man-made solar technologies of the future."

"It is my hope that this center will expand on Rensselaer's very strong foundation in energy research and establish Rensselaer and its faculty

and students as leaders at the forefront of solar energy research," Baruch said. "The research talent and infrastructure of Rensselaer create the perfect storm of ideas and innovations that I believe will result in the creation of solar technologies with greater efficiency of even the most sophisticated silicon solar panels available on the market today."

The center will include faculty from a variety of disciplines and research backgrounds. In the initial stages, the research will center on molecular chemistry and biochemistry to map out the step-by-step processes that nature's perfect green machines go through to convert solar rays into life-sustaining energy, according to Rensselaer Provost Robert Palazzo. "The research will begin by looking at the processes that plants use to intake and utilize the energy from the sun at such an amazing level of efficiency," he said. "This scientific knowledge could provide other Rensselaer scientists and engineers information to develop new technologies that present an entirely new means of harnessing energy from the sun."

Jonathan Dordick, director of the Center for Biotechnology and Interdisciplinary Studies and a chemical engineer, also envisions strong possibilities for entirely new forms of light-capturing technologies. "Ultimately, biomimetic designs will be integrated with nature's biological machinery to provide scalable, efficient, and broadly applicable systems that convert light into usable and storable energy. This has the potential to revolutionize future energy generation and secure our future as a safe and sustainable society."

K.V. Lakshmi, assistant professor of chemistry and chemical biology, will help lead the effort at the center to capture the extremely complex reactions of photosynthesis in action, which is a vital first step in the research process. One of the recipients of the first-ever federal Department of Energy (DOE) funding for the investigation of biochemical solar power, Lakshmi is working with fellow assistant

professors of chemistry and chemical biology James Kempf, an expert in Nuclear Magnetic Resonance (NMR) techniques, and Mark Platt, an expert in plant protein and spectroscopy, to understand how the inner workings of the plant protein complex transforms light into power through photosynthesis. Their colleagues, including assistant professor of chemistry and chemical biology and molecular chemist Peter Dinolfo, as well the faculty in disciplines from biology to chemical engineering will use this foundational knowledge to build synthetic replications of the natural systems to capture and move light energy.

"There is absolutely no doubt that the single most daunting problem that is facing this country and the world is energy independence and security," Lakshmi said. "Solar energy conversion is an important area of research with unbelievable implications for the future. We need transformational science, on the interface of chemistry, biology and physics, to create new technological innovations for solar energy utilization that represent the great convergence of the 21st century."

Source: Rensselaer Polytechnic Institute