

# J *The Twenty-fourth Annual Jacob Bigeleisen Endowed Lecture*

Presents

## *Professor Daniel G. Nocera*

Patterson Rockwood Professor of Energy  
Department of Chemistry & Chemical Biology  
Harvard University

### ***“THE ARTIFICIAL LEAF”***

Friday, September 26, 2014

Lecture starts at 4:00 p.m.

**Simons Center Auditorium**

**Stony Brook University**

Refreshments served at 5:15 p.m. in the Simons Cafe

Hosted by: Department of Chemistry

Stony Brook University

Stony Brook, New York 11794-3400



Dr. Daniel G. Nocera graduated with a BS, 1979, Rutgers University and a PhD, 1984, California Institute of Technology. His Ph.D. research advisor was Harry B. Gray. Before joining Harvard, Nocera began his career at Michigan State University, where he was a University Distinguished Professor and then was on the faculty of MIT where he was the Henry Dreyfus Professor of Energy. Nocera has mentored 120 Ph.D. graduate and postdoctoral students, published over 350 papers and given over 750 invited talks and 80 named lectureships. In 2008, he founded Sun Catalytix, a company committed to bringing personalized energy to the non-legacy world.

Daniel G. Nocera is the Patterson Rockwood Professor of Energy at Harvard University. His current research focuses on the basic mechanisms of energy conversion in biology and chemistry with primary focus in recent years on the generation of solar fuels. Solar fuel reactions require the coupling of multielectron processes to protons, which are energetically uphill, thus requiring a light input. Nocera has pioneered each of these areas of science. Most examples of multielectron photoreactions have originated from his research group in the past decade. This work has relied on the generalization of the concept of two-electron mixed-valency in chemistry. He created the field of proton-coupled electron transfer (PCET) at a mechanistic level with the publication of the first ultrafast laser study of an electron transfer through a hydrogen bonded interface. With the frameworks of multielectron chemistry and PCET in place, he has recently accomplished a solar fuels process that captures photosynthesis and he has constructed an artificial leaf, which uses sunlight to directly produce the solar fuels of hydrogen and oxygen from water with sunlight as the energy input. This discovery of artificial photosynthesis sets the stage for a storage mechanism for the large scale, distributed deployment of solar energy.

His contributions to the development of renewable energy have been recognized by a number of awards, some of which include the Eni Prize (2005), IAPS Award (2006), Burghausen Prize (2007), MJ Collins Award (2010), Roseman Award (2010), Elizabeth Wood Award (2010) and the United Nation's Science and Technology Award (2009) as well as the Harrison Howe (2008) and Remsen (2012) Awards from the American Chemical Society. He is a member of the American Academy of Arts and Sciences, the U.S. National Academy of Sciences, and the Indian Academy of Sciences. He was named as one of Time Magazine's 100 Most Influential People in the World and was 11th on the New Statesman list of the most influential people in the world.

The Jacob Bigeleisen lectures are supported by an endowment established by a circle of friends on the occasion of his 70th birthday. The purpose of the endowment is to enrich the educational program at Stony Brook through an annual lecture in chemistry by a scholar of international reputation. Jacob Bigeleisen, Distinguished Professor of Chemistry, retired in 1989 after eleven years as an active member of the Stony Brook faculty. Prior to coming to Stony Brook, he was Tracy Harris Professor and Chairman of the Chemistry Department at the University of Rochester. He was a member of the scientific staff of Brookhaven National Laboratory for twenty years before joining the Rochester faculty. He is the recipient of numerous awards and fellowships for his work in pure and applied isotope chemistry. He is a member of the National Academy of Sciences and a Fellow of the American Academy of Arts and Sciences.

Sponsored by  
Jacob Bigeleisen Endowment Lecture Fund and the  
Department of Chemistry at Stony Brook University.

For further info or if you need a disability-related  
accommodation, please call (631) 632-7884.



**Stony Brook  
University**