IIT Chemistry presents
The 2013 Kilpatrick Lecture

Alternative Energy for Society & Third-World Applications

“The Artificial Leaf”

Daniel G. Nocera
Patterson Rockwood Professor of Energy, Department of Chemistry & Chemical Biology, Harvard University

Nocera is a chemist whose research focuses on developing inexpensive new energy sources for the world’s poor. Most famously, he created an “artificial leaf”—a silicon solar cell with different catalytic materials bonded onto its two sides—that makes fuel from sunlight.

The McCormick Tribune Campus Center (MTCC), McCloska Auditorium
IIT Main Campus, 33rd & State Street, Chicago
Wednesday, April 17, 2013

Past Kilpatrick Lecture Speakers

1965 Ronald Percy Bell
1966 Lord Wynne-Jones
1967 Henry Eyring
1968 Martin Karplus
1969 John D. Roberts
1970 Manfred Eigen, George B. Kistiakowsky
1971 John R. Platt
1972 George C. Pimentel
1973 Roald Hoffman
1974 Richard B. Bernstein
1975 Henry Taube
1976 William N. Lipscomb
1977 Melvin Calvin
1981 Symposium: Carbenes, Carbenoids, Cyclopropanes in Organic Synthesis
1982 Symposium: Chemistry at Metal Surfaces
1984 Jack Halpern
1985 David L. Beveridge
1986 Symposium: Polymers (in memory of Paul Flory)
1989 Jaqueline K. Barton
1991 Mark S. Wrighton
1992 Symposium: Conducting Polymers
1993 Mary Anne Fox
1995 Symposium: Synchrotron Radiation in Chemistry
1996 Symposium: Host-Guest Interactions and Supramolecular Structures
1997 K. C. Nicolaou
1999 Wolfgang Gopel
2000 Symposium: Computational Chemistry with John Pople
2001 Symposium: Nanoscience and Nanotechnology
2003 Barry M. Trost
2004 Symposium: Enzyme Dynamics
2008 Fraser Stoddart
2009 Susan V. Olesik
2010 Symposium: Recent Advances in Polymer Science and Technology
2011 George Whitesides
Welcome Note

Welcome to the 2013 Kilpatrick Lecture in chemistry. The theme of this year’s Kilpatrick event is ‘Alternative Energy for Society & Third-World Applications.’ We are very excited to have such an outstanding speaker, Daniel G. Nocera, Patterson Rockwood Professor of Energy at Harvard University, whose work opens up new opportunities to achieve a secure energy future. Nocera’s work has the potential to develop inexpensive new energy sources, most notably his “artificial leaf”—a silicon solar cell of catalytic materials that creates fuel from sunlight, capturing elements of photosynthesis.

The legacy left by Martin and Mary Kilpatrick has continued to inspire innovative teaching and creative research at IIT. A prominent example is our chemistry program, which provides a rigorous education that competitively prepares our students for careers in academia, industry, and government. Our research programs cut across traditional areas of science to solve real-world problems in catalysis, pharmaceuticals, therapeutics, materials, and sustainable energy.

On behalf of the IIT chemistry community, faculty, staff, and students, and the Kilpatrick lecture committee, I would like to thank you for joining us for this special IIT annual event.

Sincerely,
M. Ishaque Khan
Professor of Chemistry
Executive Associate Chair, Chemistry
2013 Kilpatrick Lecture Committee: Brant Cage, Chair; Richard Guan; Adam Hock

About the Kilpatrick Lecture

IIT’s annual Kilpatrick Lecture honors Martin and Mary Kilpatrick, who were outstanding researchers and educators. Martin served as chair of IIT’s Department of Chemistry from 1947–1960, leading the department to national prominence in both undergraduate and graduate instruction and research. As a scientist, Martin made his mark in fundamental chemical research in areas of physical and inorganic chemistry, and materials science. Mary was a chemistry faculty member from 1947–1964.

The Kilpatricks devoted their lives to the critical and creative study of chemistry, particularly chemical kinetics, acid-based reactions, and electrolyte chemistry. Before coming to IIT in 1947, Martin was a professor at the University of Pennsylvania and assisted Harold Urey in the Manhattan Project at Columbia University. Both Kilpatricks were Fulbright research scholars who studied in Denmark under the legendary J. N. Bronsted.

As chair at IIT, Martin guided the department during a period of vigorous growth and development in both teaching and research. Initially, the department occupied all of Wishnick Hall—one of the then three new buildings by Ludwig Mies van der Rohe that marked the beginning of today’s modern Main Campus.

In recognition of the Kilpatricks’ achievements at IIT, Martin’s successor, Arthur E. Martell, and faculty colleagues instituted the now permanently endowed Kilpatrick Lecture.

Daniel G. Nocera

Daniel G. Nocera is the Patterson Rockwood Professor of Energy at Harvard University. He is widely recognized in the world as a leading researcher in renewable energy at the molecular level. His group pioneered studies of the basic mechanisms of energy conversion in biology and chemistry with primary focus in recent years on the generation of solar fuels. He has recently accomplished a solar fuels process that captures many of the elements of photosynthesis and he has now translated this science to produce the artificial leaf, which was named by Time Magazine as one of the top inventions of 2011. This discovery sets the stage for a storage mechanism for the large scale, distributed deployment of solar energy. Other areas of interest include the development of proton-coupled electron transfer and its application to radical enzymology, the development of new cancer therapies by creating nanocrystal chemosensors for metabolic tumor profiling, the creation of spin frustrated materials, which has culminated in the discovery of the quantum spin liquid, and the invention of molecular tagging velocimetry technique for the measurement of highly turbulent fluid flows.

He has been awarded the Eni Prize, Inter-American Photochemical Society (I-APS) Award, Burghausen Prize, Elizabeth Wood Award, United Nation’s Science and Technology Award and, from the American Chemical Society, the Award in Inorganic Chemistry, and the Harrison Howe and Remsen awards for his contributions to the development of renewable energy. He is a member of the American Academy of Arts and Sciences and the U.S. National Academy of Sciences. He was named as one of the 100 Most Influential People in the World by Time Magazine and was 11th on the New Statesman’s list on the same topic. Nocera is a frequent guest on TV and radio; he is regularly featured in print and he was in the feature-length film Cool It, which premiered in the U.S. in November 2010. His film with PF Pictures won the Jury Prize Award at the 2013 Sundance Film Festival. His 2006 PBS show was nominated for an Emmy Award, and the show was used as a pilot to launch the PBS NOVA show ScienceNow, which is now a regularly scheduled science program on PBS. In 2008, he founded Sun Catalytix, a company committed to bringing personalized energy to the non-legacy world.

Event Schedule

4 p.m. Welcome from Chair of the Kilpatrick Lecture Committee, Assistant Professor Brant Cage
4:05 p.m. Remarks from IIT College of Science and Letters Dean Russell Betts
4:10 p.m. Introduction of the Speaker, Daniel G. Nocera, by Brant Cage
4:15 p.m. 2013 Kilpatrick Lecture: The Artificial Leaf, Daniel G. Nocera, Patterson Rockwood Professor of Energy, Department of Chemistry & Chemical Biology, Harvard University
5:30–7 p.m. Reception and Poster Session, MTCC Ballroom
6:30 p.m. Poster Session awards, Associate Professor Richard Guan
6:45 p.m. Kilpatrick Fellowship & Kilpatrick Scholarship awards, Professor M. Ishaque Khan, Executive Associate Chair, Chemistry

PBS. In 2008, he founded Sun Catalytix, a company committed to bringing personalized energy to the non-legacy world.