

## University of Rochester Virtual Institute for Energy

A Kauffman Entrepreneurial project that emphasizes sustainable energy and uses multidisciplinary student involvement to discover new solutions.

### Energy Lecture Series:

With presentations in [Sloan Auditorium \(Goergen Hall 101\)](#) by:

U of R Lecturers:

**Philippe M. Fauchet**

**January 30th**

**4pm**

“Energy: Mankind’s Gravest Challenge”



Dr. Philippe Fauchet is a Distinguished Professor of Electrical and Computer Engineering at the University of Rochester. He also is a Professor of Optics, Materials Science, Biomedical Engineering, and a Senior Scientist at the Laboratory for Laser Energetics. Dr. Fauchet has nearly 30 years of experience in silicon-based nanoscience and nanotechnology for applications in energy, photonics, and biology. His research on nanoscale silicon has led to hundreds of publications in leading technical journals and numerous plenary, invited presentations in major international conferences, and has been widely featured in the international media. His research groups have made tremendous achievements on reducing the cost and increasing the efficiency of conventional silicon solar cells and are currently also looking into using silicon as a potential for fuel cell membrane proton exchange. Presently he is involved with a major Energy Research Initiative at the University of Rochester.

**Ben W. Ebenhack**

**February 6th**

**4pm**

“Extending and Preserving the Energy Advantage”



Ben W. Ebenhack is a Senior Lecturer in Chemical Engineering at the University of Rochester, where he teaches courses including "Energy Resources", "Energy Alternatives Lab" and "Solving UR's Environmental Footprint." At the University of Rochester he is part of the president's Council on Environmental Sustainability. He is the founding faculty advisor for the University's Engineers for a Sustainable World (ESW) student chapter and also the founder and Chairman of the Board for AHEAD Energy Corporation, a public charity that seeks to assist Developing Countries in their energy transitions. AHEAD has been involved recently in working with the southern African nation of Mozambique. He formerly held several positions with a multi-national petroleum company and has particular expertise in Formation Evaluation technologies, including a patent and other discoveries. He holds BS and MS degrees in Petroleum Engineering from Marietta College and the University of Wyoming respectively. Ben's talent has led him to author the "Energy Policy" section of *Our Fragile World: Challenges and Opportunities for Sustainable Development*, (UNESCO, 2001) and has several articles currently coming out about the character of energy transitions.

**Richard M. Ryan**

**February 20th 4pm**

**“Consumerism vs. Happiness and our Environmental Footprint”**



Richard Ryan is a clinical faculty member at the University of Rochester whose research focuses on the effects of social contexts on human motivation, personality development, and well-being. His current research interests include: empirical research showing that materialism doesn't make you happy. His research is pointing at the idea that once a person is above the poverty level, having more material goods doesn't add to your quality of life. Business marketing convinces people to buy stuff that is superfluous, that doesn't make them happy, that they don't need, and yet causes environmental destruction through their purchasing. This finding is part of educating people about the truth of what happiness is and maybe helping people get off the treadmill that every-day advertisements have people running on. His research has led to a collaboration with Unilever, an international manufacturer of leading brands in consumer goods, to see whether they can adjust their production line and advertisements to fit in with this wisdom.

**Wolf-Udo Schröder**

**March 5th 4pm**

**“Energy Realpolitik: Towards a Sustainable Energy Strategy”**



Professor Schroeder holds positions as Professor in the Department of Chemistry and Physics at the University of Rochester. Wolf-Udo has nearly 40 years of experience in the area of Experimental Nuclear Physics. His group explores fundamental properties of nuclear matter and the dynamics of complex nuclear reactions induced by heavy ions or relativistic protons/antiprotons. His expertise and personal convictions has led him to write a pamphlet entitled, *Energy Realpolitik*, a long term strategy based on existing technological, ecological, economical, and geopolitical realities which is urgently needed to develop a sustainable energy economy. While only a highly diverse energy portfolio and conservation can ultimately guarantee optimum sustainability, based on a comparison of current primary energy generation methods, it is argued that future energy strategies must rely heavily on expanded coal and nuclear energy sectors. A comparison of relative potentials, merits and risks associated with fossil fuel, renewable, and nuclear technologies suggests that the balance of technologies should be shifted in favor of new generation, safe nuclear methods to produce electricity, while clean coal plants should be assigned to transportation fuel. In conclusion research opportunities to perfect innovative nuclear, coal, and renewable energy technologies should be pursued.

**Guest Lecturers:**

**Daniel G. Nocera, M.I.T.**

**March 18th 7:30pm**

**“Powering the Planet: The Challenge for Chemistry in the 21<sup>st</sup> Century”**



Dan Nocera is Henry Dreyfus Professor of Energy and Professor of Chemistry at MIT. Dan is a world leader in the study of energy at the molecular level. He is best known for research on energy conversion in biology and chemistry, especially focusing on solar generation of hydrogen and oxygen from water. Nocera has been an innovator, discovering multi-electron photoreactions for hydrogen production, and pioneering the molecular understanding of proton-coupled electron transfer. In addition, Nocera has been a tireless proponent of fundamental research on energy issues, organizing numerous recent workshops and conferences on renewable and sustainable energy. He is an engaging speaker, and will continue to be a major figure in energy catalysis in the future.

[Héctor D. Abruña](#), Cornell

March 26th

4pm

“Electrical Energy Generation and Storage: Fuel Cells and Lithium Ion Batteries”



Héctor Abruña is the Emile M. Chamot Professor and Chair of Chemistry at Cornell University. He is an AAAS Fellow and recipient of a Presidential Young Investigator Award, a recipient of an Alfred P. Sloan Foundation Research Fellowship, a John S. Guggenheim Fellowship, the Tajima Prize of the International Society of Electrochemistry, a J. W. Fulbright Senior Research Fellowship and an Iberdrola Fellowship.

The Abruña group performs cutting-edge, interdisciplinary research on a wide variety of electrochemical phenomena. With his research group he has been developing energy-storage materials for a lithium-ion rechargeable battery and redox capacitor applications. In the area of fuel cells, his group demonstrated that ordered intermetallic phases such as PtBi and PtPb can exhibit extraordinary electrocatalytic activity for fuel cell applications. The search for new electrocatalysts has been expanded by the use of combinatorial methods so that, at present, they can screen hundreds of different materials a week. This high throughput and wide search for new electrocatalysts, could usher a new era in fuel cell research. Professor Abruña is the co-author of over 275 publications and has given over 400 invited lectures world-wide.

[Steven Chu](#) 🏆, UC Berkeley

April 17<sup>th</sup>

1pm

Hubbell Auditorium

“The Energy Problem and What We Can Do About It”



Steven Chu, University of Rochester graduate class of '70, U of R Board of Trustee member, and Physics Nobel Prize Recipient 1997. Dr. Chu has become active in the energy challenge and he is co-chairing an international InterAcademy Council (IAC) study entitled, “Lighting the way: Toward a Sustainable Energy Future; Transitioning to Sustainable Energy.” The IAC represents over 90 national academics of science around the world.

In 2007, as the sixth director of Lawrence Berkeley National Laboratory (LBNL), the lab was awarded a \$500 million grant despite stiff competition from global energy giant, Beyond Petroleum (BP, formerly British Petroleum). Over the next 10 years, the purpose of this grant is to establish a mission-specific research center called the Energy Biosciences Institute (EBI). The specific mission of EBI is to develop new and cleaner sources of energy from biomass (plant and other organic material), principally biofuels for transportation. Dr. Chu has been one of the most outspoken public advocates for biofuels research and in response to the announcement of the BP grant, he said, “This partnership with BP will develop new sustainable energy technologies that can transform the landscape. We believe EBI will create a culture where vibrant interpersonal interactions will generate extraordinarily innovative energy research.”

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**THE VIRTUAL INSTITUTE FOR ENERGY**

**UNIVERSITY OF ROCHESTER**

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