



**Ronald E. Hatcher**  
**Science on Saturday Lecture Series**  
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*Quantum Mechanics and the Future of the Planet*

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**ABSTRACT:**

If we are to survive as a species on this planet, we must make major science and engineering breakthroughs in the way we harvest, store, transmit, and use energy. Eight years ago, I made a conscious decision to reorient my entire research program – founded on developing and applying quantum mechanics methods to understanding molecular and material behavior - in directions designed to help move the planet onto a sustainable energy path. I'll give an overview of the research resulting from that choice, ranging from biofuel combustion to fusion reactor walls to new solar energy conversion and fuel cell materials. In addition to my own research, four plus years ago I became responsible for thinking more broadly about the intertwined problems of energy and environment at Princeton. I'll discuss how I see the energy landscape for the 21<sup>st</sup> century, and what I hope the Andlinger Center at Princeton will be able to do to accelerate this essential transformation of our civilization.

**BIOGRAPHY:**

Emily Carter is the Founding Director of the Andlinger Center for Energy and the Environment at Princeton University and the Gerhard R. Andlinger Professor in Energy and the Environment, as well as Professor of Mechanical and Aerospace Engineering and Applied and Computational Mathematics. She received her B.S. in Chemistry from UC Berkeley in 1982 (graduating Phi Beta Kappa) and her Ph.D. in Chemistry from Caltech in 1987. The author of over 300 publications, she has delivered over 470 invited and plenary lectures all over the world, has been recognized with many honors including election to the National Academy of Sciences in 2008, and serves on numerous advisory boards spanning a wide range of disciplines. You can learn more about her at <http://carter.princeton.edu>.