

## *DISTINGUISHED LECTURER SERIES*

*VCU  
MECHANICAL ENGINEERING*

---

### *Fossil Fuel Depletion, Global Warming, and the Solar Energy Solution*



*Dr. David E. Carlson  
BP Solar*

*9 February 2009  
Social Hour: 11:30—12:00  
noon  
Seminar: 12:00—1:00 pm  
Room E2214  
Engineering East Hall*

---

## *ABSTRACT*

---

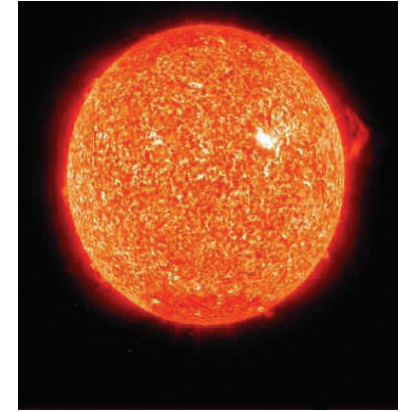
The world has been consuming fossil fuels at an accelerating rate since the beginning of the industrial age, and there is growing evidence that the production of all fossil fuels may peak within the lifetime of the children being born today. This rapid consumption of fossil fuels is leading to a concurrent increase in atmospheric carbon dioxide and other greenhouse gases. These changes in the atmosphere are in turn creating widespread changes in the global climate. This talk will provide an overview on the depletion of fossil fuels in various parts of the world and will review some of the significant changes that are occurring in the earth's climate. One major concern is that the increase in the melting of the world's glaciers and ice sheets is causing an increase in sea levels that could lead to major dislocations of people and a massive destruction of infrastructure within the next century. The only energy source that has the potential to replace fossil fuels and not adversely affect the environment is solar energy, and photovoltaic energy conversion appears to hold the most promise for securing low-cost, high-quality energy for the future

---

## *BIOGRAPHY*

---

Dr. Carlson received the B.S. degree in Physics from Rensselaer Polytechnic Institute in 1963 and the Ph.D. in Physics from Rutgers University in 1968. He worked as a Research and Development Physicist at the U.S. Army Nuclear Effects Laboratory, Edgewood Arsenal, Maryland in 1968 and 1969. He served as a U.S. Army Captain in charge of 110 men at a communications site in Pleiku, Vietnam in 1969 and 1970. In 1970, Dr. Carlson joined RCA Laboratories in Princeton, New Jersey as a Member of the Technical Staff and worked in the areas of ion motion in glasses, glow-discharge deposition of thin films and thin-film photovoltaic devices. Dr. Carlson received an RCA Laboratories Outstanding Achievement Award in 1973 for his work on the ion depletion of glasses and one in 1976 for the development of amorphous silicon devices. Dr. Carlson invented the amorphous silicon solar cell at RCA Labs in 1974 and was the first to demonstrate that hydrogenated amorphous silicon could be doped either p- or n-type and could be used to form a semiconductor junction. He received the top technical award of the American Ceramic Society (the Ross Coffin Purdy Award) "in recognition of his outstanding contributions to ceramic literature in the year 1974". In 1977, Dr. Carlson was appointed Group Head, Photovoltaic Device Research, at RCA Laboratories. In 1983, he joined Solarex Corporation (merged into BP Solar in 1999) as the Director of Research and Deputy General Manager of the Solarex Thin Film Division. He became the General Manager of the Solarex Thin Film Division in 1987 and was promoted to Vice President in 1988. In 1994, he became Vice President and Chief Technologist of Solarex. In 1999, he became the Chief Scientist of BP Solar and the Manager of Future Technology Programs. He also manages the Intellectual Property System for BP Solar.



---

*Contact:  
Mechanical Engineering  
School of Engineering  
Virginia Commonwealth  
University  
401 West Main St  
Richmond, VA 23284-3015  
Office: 804-828-9117  
Fax: 804-827-7030*

