Speaker Detail

Status Active
Name Dr. Leonard W. Fine
Organization Columbia University
Address Type Work
Address Department of Chemistry
Havemeyer Hall, Mail Station 3108
New York, NY 10027
Work Phone (212) 854-2017
Home Phone (203) 847-0849
Fax (212) 932-1289
Email lf4@columbia.edu

Birthdate April 19, 0035
Sex Male
Audiovisual Needs
Accompanied By

Talks

- **Einstein and Chemical Thought: A Scientific Retrospective from a Chemist's Point of View**

For most of his life, Albert Einstein was the world's preeminent scientist-philosopher and teacher. He popularized and translated ideas, setting standards by which his contemporaries and successors have come to be judged. But Einstein was more than the serious scholar, author, and creator of the accessible theories his public image suggests. Einstein's writings are universally read today ... and are universally understood. One peculiar aspect of his work is reflected in the attention he gave to history, philosophy, and sociology of science. Einstein understood the importance of such matters to the deeper meaning of science. Here was no idle intellectual speculation or literary style. At the heart of the matter was nothing less than establishing the primacy of the scientific model for intellectual thought in the 20th century. Einstein was truly a man for all seasons. His work and his life are subjects of high interest. It is appropriate for scientists to examine the physicist Einstein's contribution to quantum theory and chemical thought as well as his wider ranging intellectual explorations. The talk will focus on Einstein, the man and his science. As part of the presentation, some unusual graphics will be displayed, including materials from the Centennial Year Celebration.

- **Lessons from History ... and Chemistry Lessons**

Chemistry teachers have always experimented with novel ways of increasing scientific literacy and improving the quality of life in the classroom. History-assisted instruction offers exciting opportunities for improving the understanding of science and technology and, at the same time, for changing public understanding and attitudes about science and technology. Few lessons from history -- history-assisted instruction -- are as important to chemistry and society as the invention of the electric light bulb and its successful reduction to practice a century ago. It is a lesson that is easily accessible to the student and the teacher through the primary and secondary scientific literature; that offers teacher and the student alike the opportunity to teach and learn concepts in context; and, that offers opportunities to illuminate aspects of the careers of two of this century's greatest chemists and scientific personalities -- Thomas Edison and Irving Langmuir. Fiat Lux!

- **Light Bulb**

Fiat lux! Lighting the way to better teaching and learning with light bulbs and LEDs. The incandescent light bulb has served society well for nearly a century and has been useful as metaphor for illuminating the footpath into science and engineering through early introduction to the elements of chemistry and the classical and non-classical properties of matter and energy. Near-perfect pedagogy! But as is true for all technologies, its time has come& and

just in the nick of time. Make way for the next generation of lighting and the new metaphor. Fiat lux!

- **The Color Purple and the Silver Bullet**

A study of discoveries of great historical significance to organic chemistry, medicinal chemistry, and industrial chemistry that revolve around the synthesis of Mauvine and the use of Salvarsan 606 in treating parasitic diseases.

- **The Hahn/Strassmann/Meitner Experiments and the Discovery of Nuclear Fission -- A Case Study in the Human Dimension of Science**

Using matters that belong to history offers opportunities for introducing the human dimension into the otherwise rigorous objectivity of science instruction. Nowhere is that better illustrated than in the events surrounding the Hahn/Strassman/Meitner experiments announcing the beginning of the nuclear age half a century ago. Presented on a Saturday morning in 1939 here at Columbia University, the experiments shortly thereafter appeared on the pages of the San Francisco Chronicle, before finally being properly published in the scientific journal Naturwissenschaften. The Manhattan Project followed, and within a few short years, Trinity, Hiroshima, and the first thermonuclear tests. This event is an important part of any discussion of nuclear physics, chemistry, and the quest for energy. Some unusual audiovisual materials will be used to illustrate the formal presentation, including actual recordings preserved on audio and video tape.

- **The Hydrogen Isotope of Mass 2**

It has been said of 1932 that it was "a year of wonders". Physicists discovered the positron and the neutron in that year. But in that year, chemists also made a discovery of great substance: the hydrogen isotope of mass 2. Harold Urea and his team at Columbia University identified deuterium in the concentrates from electrolytic cells and in the concentrated residues from the careful distillation of several liters of liquid hydrogen. The discovery changed the nature and direction of chemical and biological research. At the same time, war clouds were gathering in Europe, and the Columbia Heavy Water Project became the backbone of the early efforts to separate the 235 and 238 isotopes of uranium. Using recently discovered resource materials, an attempt will be made to show how the discovery of the hydrogen isotope of mass 2 transformed to discipline of biochemistry and established a remarkable career in chemistry in the life and work of Harold Urey.

- **The TECHNOSPHERE and the BIOSPHERE - Environmental Studies at the Interface Between the Two Cultures**

This is a time of powerful forward momentum for engineering and applied science and for chemistry, physics and mathematics. Ours is an era marked by sophisticated, rapidly changing, all-pervasive technology, and by physical sciences and applied mathematics that universally transform the way we live and work. At the same time, we find ourselves in global environments that demand local attention. It has been said that these are the best of times and perhaps they are, but the pessimist fears that truth. Our greatest responsibility to successors is to make them more aware of the context of their actions. How we do that, why it is important, and who should care are questions this scientist hopes to answer in words and pictures. The answers lie at the very core of the undergraduate curriculum.

- **The Three R's of Postconsumer Plastic Wastes.**

Scientific and engineering solutions to postconsumer plastic waste problems must be consistent with ecological, political, social, logistical, and economic solutions to the same problems. With that in mind, results of recent studies using commodity and engineering plastic materials from automotive and packaging applications will be described. In the interests of stimulating discussion, some suggestions for future management of plastic wastes will be offered. Plastics may be waste, but they are no longer garbage. The talk is illustrated by, and the emphasis can be centered on or be shifted toward, either recycling and recovery issues or the chemistry of polycarbonates and displacement polymerization reactions, or both. In the proper environment, one or two demonstrations can be prepared to accompany the talk. This talk is more specific and detailed than the talk on The Science of Engineering Plastics, but is entirely suitable for general audiences as well as groups with special interests.

Biographical Information

- **Biographical Sketch**

Leonard W. Fine is a Professor and dDirector of undergraduate studies in chemistry at Columbia University. His special interests include polymer chemistry and materials science, industrial inorganic and organic chemistry, engineering plastics, problems in solid waste management, and the recovery and recycling of postconsumer plastics. Among his recent publlications are two practical manuals on principles and practices of infrared spectroscopy and a general chemistry textbook for engineers and scientists. The history of science and technology have played important roles in the development of his educational philosophy and in his teaching. He received his Ph.D. (1962) at the University of Maryland at College Park. His undergraduate education was completed at Marietta College (1958) in Ohio.