



NEWSLETTER

Oklahoma Section

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Taking the Ethics of Einstein into the 21st Century

Wednesday - 14 May, 2008

Regents Room 310 - Oklahoma Memorial Union

The University of Oklahoma

Norman OK 73069

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We are an inquisitive species. Our curiosity about the structure of matter led to the discovery of the nucleus. In the cultural and political environment of the times, how short were the steps from the innocence of discovery to the atomic bombings of Hiroshima and Nagasaki, and the Cold War that followed! If you had been a graduate student in 1942, invited to help build nuclear weapons, what would you have done? If the choice of how to end World War II had been yours instead of President Truman's—invade Japan, or use the atomic bomb—what would you have decided? The deeper issues did not go away in 1945. They continue to haunt all scientists today, from hydrogen bombs to genetic manipulation to environmental sustainability. How do intellectual questions about nature lead to potentially horrific applications of knowledge? What are our ethical responsibilities as scientists? What ethical principles should guide scientific research and its applications?

We are an ambitious species. Science depends on mutual integrity that must be earned continuously. Every principle, technique, and instrument we use depends on the work of others. As part of this community, what are my obligations? How open has the professional culture been to participation by all kinds of people? How do tenure systems and proprietary claims complicate the conversation that scientists have with nature?

The principles that guided Einstein's physics are the same as those which guided his stands on issues of human dignity and social justice. I will examine those principles and what they may say to us about the ethical dilemmas we are facing and will face in the 21st century.....  

[Reservation Information on Page 2] 

Dr. D. E. Neunschwander

Dr. D.E. Neunschwander is the Chair of the Department of Physics and Professor of Physics at Southern Nazarene University. He received his B.S. from the University of Southern Colorado in 1976. After receiving his Ph.D. from Arizona State University in 1983, he was a Visiting Assistant Professor at Arizona State University from 1983-85. He has been the Manager of the Education Division of the American Institute of Physics, the Director of the AIP Society of Physics Students, the Director of the Society of Physics Students and Sigma Pi Sigma, Coach and Academic Director, United States Physics Team [for the International Physics Olympiad], 1995-98; Editor, SPS-Sigma Pi Sigma Publications, AIP, 1998-present. Dr. Neunschwander has been the Editor of the SPS Observer, The Journal of Undergraduate Research in Physics [JURP], and Radiations.

State Science & Engineering Fair: ACS Winners—2008

Friday [03/28/08], Ken Brown judged the State Science & Engineering Fair at Ada. Ken did double duty: he judged all the physical science projects as a general judge. Then he looked around the whole fair for projects containing significant chemistry to judge for the Section's awards. The following lists this year's Section winners.

Junior High

First Place-- Tanner Linn of Grove, OK whose project was in the Environmental Science Section--"*A Composite Study of Phosphate Levels in Honey Creek and It's Tributary, Cave Springs.*"

Second Place-- Zuri Holder of Muskogee, OK whose project was in the Biochemistry, Medicine and Health Section--"*Testing Vitamin C in Fruits and Vegetables.*"

Third Place-- Lacey Jobe of Grove, OK whose project was in the Environmental Science Section--"*How green is your scum? A study of the effects of fertilizer run-off on a conventional pond food chain.*"

Senior High

First Place--Mina Sardashti of Bartlesville, OK whose project was in the Physical Science Section--"*AlcoHauling Green Energy: Does proton concentration correlate with BTU?*"

Second Place--Taylor Runyan of Lane, OK whose project was in the Biochemistry, Medicine and Health Section--"*How do supermarket tomatoes compare in Lycopene? A second year study.*"

Third Place--Nathan Kneeland of Miami, OK whose project was in the Engineering Section--"*Evaluating Fumed Silica Composite Polymer Electrolytes on the Efficiency and Surface Chemistry of a Solid-State Battery at the Nanoparticle Level.*"

Each winner received a check from the Section at the awards program on Saturday and was sent a Certificate of Award. Checks were \$150--\$75--\$50 at the Senior High level and \$100--\$50--\$25 at the Junior High level.

Ecology, water and biodiversity enter ethanol debate ***

Vegetation scientists have concerns about the nation's increasing race to plant fuel crops, and Oklahoma State University department of biology professor, Mike Palmer recently highlighted many of them.

Speaking at the Natural Resource Ecology and Management Seminar at the Stillwater campus March 28, Palmer focused on biofuel feed stocks, biodiversity and ecology. In his presentation "*Biofuels for Biodiversity: Choosing the Right Path,*" he brought attention to difficulties inherent in using plants for fuel.

Palmer is involved with research at the Nature Conservancy's Tall Grass Prairie Preserve and other sites that focus on aiding efforts in conserving and restoring native grasslands around the world. He also studies issues relating to sustainability in biofuel research.

“Currently, there is a major landscape level change,” Palmer said. “Instead of food and fiber and a little conservation, the landscape is being expected to produce fuel.”

Renewable fuel mandates of 2007 will see corn ethanol continue to increase, he said. Palmer said ethanol is only one of the fuel demands being placed on the worldwide landscape. He also cited rapidly growing palm plantations whose development had drastically decreased Asian forestland.

“The question is – do ecologists have something to say about this?” Palmer said.

“This is not just in the future. It is happening,” Palmer said. “Corn ethanol is going to more than double.”

Palmer spoke of record amounts of virgin soil being turned in North America’s prairie lands. He also stressed the consequential demands increasing cropland will have on water resources.

“The Ogallala Aquifer cannot support the current expansion of the ethanol effort,” Palmer said. The Ogallala Aquifer supports agriculture in an eight state area of the High Plains.

“Maize in a very energy intensive crop. Do the “energetics” balance? Are we homogenizing the landscape? Are we poisoning the landscape? Are we hurting the poor with higher food prices?”

The pursuit of biofuels is at least partially responsible for the increase in the price of food worldwide. Other concerns about turning to marginal lands for new crops are engaging biologists who study both plant and wildlife habitat and diversity.

“People are concerned about wildlife in Southeast Asia and in The New World as well,” he said.

Palmer mentioned the expansion of the dead zone in the Gulf area where he said \$750 million worth of nitrogen dumps out of the Mississippi river annually.

“We are seeing more and more vary highly enriched waters,” Palmer said. The amount of nitrogen from agricultural fertilizers washed through watersheds into the Gulf financially constitutes “more than is spent on sub-Saharan Africa,” he said.

Palmer is concerned that focusing on yield alone will not address all of the concerns and could short change research in other promising areas, particularly that of low impact-high diversity grasslands.

Palmer referred those at the NREM seminar to the “LIHD biofuels for the sake of biodiversity blog,” at <http://cas.okstate.edu/debo/blogs>, where current research information and reports are available.

*** [This article is reprinted from the April 7, 2008 edition of The High Plains Journal, Page 12-B]

TV Commercial vs Fact :

A recent TV commercial extoles the virtues and benefits of using E-85. Of course, the commercial does not say your car or truck must be a Flex Fuel vehicle to use E-85. The voice over says ethanol is now being produced from a renewable food source [corn] as well as cellulosic materials [wood chips, grass, grain straw, etc]. Fact: cellulosic ethanol is not now commercially produced.

The following letter puts “cellulosic ethanol production” into better perspective!

One Hates To Be considered a curmudgeon, but I will chance it. I am a retired biochemical engineer, my undergraduate years were 1952-56. I can recall reading about cellulose-to-ethanol conversion attempts then with the view that the conversion would be become reality in “the next four to six years.” If memory serves, a pilot plant was built at Natick [or perhaps it was Massachusetts Institute of Technology] to prove this concept. The current hope for success is worthy, but this curmudgeon wouldn’t bet on it.

Harold B. Reisman
Carlsbad, Calif..

[This letter appeared in the 03/12/07 issue of C&E News. It is reprinted by permission of the author.]

Study: Hydrogen research worth the cost ***

Big obstacles confront research aimed to develop fuel cell vehicles and hydrogen fuel, a panel of experts says.

But the National Research Council panel concludes that research remains “justified by its potentially enormous benefits to the nation.” The panel reported its findings in a 160-page study released last week.

Hundreds of millions of taxpayer dollars annually subsidize the research. It is conducted by government and industry, including the Detroit 3.

The panel warns some solutions to problems – such as how best to store enough hydrogen on a vehicle – are “as yet undiscovered.” Auto makers use high pressure hydrogen tanks in the demonstration vehicles they now deploy.

If better methods are not found, researchers should “perform appropriate studies to determine the risks and consequences, of relying on pressurized hydrogen storage,” the report says.

The panel cites considerable progress in fuel cell & hydrogen research. It calls for “a strategic reassessment” to account for changed national research priorities. The report includes dozens of proposals to improve the research.

The initiatives reviewed by the panel are called the Freedom and Fuel Research and Development Program.

Deflating high-pressure tanks

“It seems likely that the automotive original-equipment manufacturers can innovate enough to store sufficient compressed hydrogen onboard for a 300-mile [or more] range, but it is not clear that this can ever be a satisfactory solution for millions of mass-produced vehicles.”

“Committee on Review of the FreedomCAR and Fuel Research, Development Program, National Research Council”.

In 2003, the Bush administration set a goal of making enough research progress by 2015 so the auto industry could decide to commercial vehicles powered by fuel cells by 2020. But in the past several years, President Bush has shifted concentration to renewable fuels such as ethanol and battery power.

Among the report’s conclusions:

- There is a lack of urgency in completing/executing a r&d plan for plug-in-hybrid-electric vehicles. Such vehicles are now viewed as a more promising short-term alternative to traditional vehicles than fuel cells.
- Some money spent to reduce the cost of lightweight materials “should be redistributed to areas of higher potential payoff.”
- The U.S. Department of Energy should extend its study of the challenges to switching to hydrogen fuel to the 2030-35 time frame.

The research council panel was chaired by Craig Marks, a former vice president of AlliedSignal Inc.

The panels 18 members include three Detroit 3 retirees: Peter Beardmore, a former laboratory director at Ford Motor Co.; Bernard Robertson, former senior vice president of engineering technologies at Daimler-Chrysler; and Kathleen Taylor, former head of the physics and physical chemistry department at General Motors.

Detroit 3 employees take part in research the panel evaluated. The companies’ research organization, the U.S. Council for Automotive Research, hailed the report for supporting the work they are doing with government.

Other research participants are suppliers, academic institutions, national laboratories and energy companies.

The NRC is the operating agency of the National Academy of Sciences and National Academy of Engineering. The congressionally chartered nonprofit institutions offer advice on science and technology issues of national interest.

*** [This article is reprinted from the 03/24/08 edition of Automotive News.]

Suggested Reading :

The Clean Energy Myth - Michael Grunwald

Time April 7, 2008

“Politicians and Big Business are pushing biofuels like corn-based ethanol as alternatives to oil. All they’re really doing is driving up food prices and making global warming worse—and you’re paying for it.”

For more information about the author & other books/articles he’s written:: Google Michael Grunwald

Reprinted letters and articles as well as the editor’s unsigned article[s] in this Newsletter do not necessarily reflect the views of the Oklahoma Section of the ACS.

Oklahoma Section Website:

Dr. James J. Dechter – is the Section webmaster. Jim is Professor of Chemistry at the University of Central Oklahoma. To post information on the website, contact Jim. 405.974.5435. e-mail: jdechter@ucok.edu. The Oklahoma Section web site: <http://membership.acs.org/O/Oklahoma/Index.htm>.

May 2008 Section Meeting

Wednesday 14 May, 2008

**Regents Room 310
Oklahoma Memorial Union
University of Oklahoma
Norman OK**

[1] Annual Awards Banquet Presentations

[2] Speaker: Dr. D. E. Neuenschwander – Bethany Nazarene University

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