

UC SANTA BARBARA

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## **Capturing Emerging Nanotechnology -- Researchers Scrutinize 'Spintronics' as History in the Making**

(St. Louis, MO) -- Electronic mail, Web sites, conversations, and experiments about the emerging field of nanotechnology might quickly slip into the past without the work of historians working to document them as they occur.

W. Patrick McCray is attempting to understand the history of nanotechnology as it emerges, a goal that he will pursue with his research group at the new Center for Nanotechnology in Society. Funded by the National Science Foundation, the center opened just last month at the University of California, Santa Barbara.

McCray, co-director of the center and an associate professor in the UCSB Department of History, researches and teaches about post-1945 science and technology. A key project of the center is the historical context of nanotechnology. McCray and his colleagues are beginning their work using the relatively new field of "spintronics" as a case study. He will describe this work and the overall activities of the new center at the annual meeting of the American Association for the Advancement of Science in St. Louis today.

"As one example, it's hard to imagine life today without the transistor," said McCray. "The futures of spintronics and many other fields in nanotechnology are hard to predict, but they may have a major impact on our society and economy."

McCray is collaborating with Timothy Lenoir, the Kimberly Jenkins Chair for New Technologies and Society at Duke University, and Cyrus Mody, the program manager for nanotechnology and innovation projects in the Center for Contemporary History and Policy at the Chemical Heritage Foundation in Philadelphia.

One area of nano-research that appears most exciting to scientists, commercial firms, and government patrons is the development and implementation of nanoelectronics as a replacement for systems based on microelectronics, explained McCray. The potential economic and social effects of this transformation may be profound.

Together, these historians will document developments in the nascent field of spintronics, taking advantage of a three-month research conference on the topic at the University of California, Santa Barbara's Kavli Institute for Theoretical Physics that begins next month. McCray and his colleagues will interview conference participants as part of an effort to document this particular area of nanoscience research. These interviews will be publicly available and also archived at the American Institute of Physics in College Park, Maryland.

Lenoir and his group at Duke will apply the tools they have developed for data mapping and visualization to the spintronics sub-field. This work will be directed toward understanding the development of nanoelectronics, temporally and spatially, and will include aspects such as research funding, patents, publications, and research groups.

McCray called the project an experiment in understanding a new technology as it emerges, documenting "history as it happens." He compared recent government support for nanotechnology – some \$6.5-billion thus far – to the U.S. space program in the early 1960s, when a large infrastructure for science and technology was established.

The Center for Nanotechnology and Society is one of several Nanoscale Science and Engineering Centers funded by the National Science Foundation as part of the National Nanotechnology Initiative. Arizona State University also has a Center for Nanotechnology and Society; together the two universities anchor a national network of researchers studying nanotechnology and society sponsored by the NSF.

The UCSB center is funded for 5 years and takes advantage of the campus's rich environment for interdisciplinary research. It is affiliated with the California

NanoSystems Institute, a joint effort between UCSB and UCLA that is internationally recognized for nanoscale science and engineering.

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