

OKLAHOMA EPSCoR Research Connection

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Quarterly News from the Oklahoma Experimental Program to Stimulate Competitive Research

May 2004



OK EPSCoR

Mission of EPSCoR

EPSCoR identifies, develops, and utilizes a state's academic science and technology (S&T) resources in ways that ultimately will support a more productive and fulfilling way of life for its citizens.

To achieve this end, the NSF cooperates with state leaders in government, higher education, and business to establish productive long-term partnerships in support of common goals. Such partnerships are designed to stimulate local action that will result in lasting improvements to the state's academic research infrastructure and

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EPSCoR Holds Joint Annual State Conference in Stillwater May 13

The Oklahoma National Science Foundation (NSF) Experimental Program to Stimulate Competitive Research (EPSCoR) will host an annual joint conference of functional genomics and nanomaterials sciences research on Thursday, May 13, 2004 from 8:30 a.m. to 5:20 p.m., in Stillwater, at Oklahoma State University in the Student Union Little Theatre. All faculty, post-docs, graduate and undergraduate students, and industry researchers from the two RII grant theme areas are invited to attend.

The conference will host nanomaterials sciences and functional genomics bridge lectures by Dr. Robert Dunn, University of Kansas

and Dr. Stephen Winters-Hilt, University of New Orleans.

Breakout sessions will feature other Oklahoma and nationally recognized leaders from the cutting-edge fields of nanomaterials sciences and functional genomics.

Researchers are invited and encouraged to present scientific posters, as the conference will host an afternoon poster session.

The conference is free to participants, however, registration is required.

Please visit the

Oklahoma EPSCoR website for a detailed agenda, and registration forms at:

**REGISTRATION &
AGENDA ON-LINE AT:
[HTTP://OKEPSCOR.ORG/
CONFERENCE/INDEX.HTML](http://okepscor.org/conference/index.html)**

<http://okepscor.org/conference/index.html>.

For more information please contact Shelley Wear, Special Programs Coordinator at (405) 225-9287 or swear@osrhe.edu.

RII Proposal Theme Areas Selected

The next NSF RII Proposal will be submitted on July 19, 2004. If funded, the grant will add up to \$9 million NSF & \$4.5 million state match to improve Oklahoma's infrastructure needed to compete for large-scale research center grants.

Site visits were held last December to facilitate collaboration for the proposal. Thirty-two groups presented ideas at a plenary session held March

12, 2004 at OSU. From the original 32 projects, 17 white papers were submitted to the State EPSCoR Committee for consideration. Dr. Frank Waxman, State EPSCoR Director, states, "the Committee had a very tough decision to make with so many outstanding proposals." The committee selected Nanoscale Materials Science and Engineering, lead by Drs. Warren Ford, Professor of Chemistry at OSU and Matthew John-

son, Professor of Physics at OU, and Plant Virus Biodiversity and Ecology, lead by Drs. Ulrich Melcher, Professor of Biochemistry and Molecular Biology and Marilyn Roossinck, Research Scientist at Samuel Roberts Noble Foundation, for inclusion in the next RII proposal. Criteria for selection included the centers' ability to vie for possible large-scale research centers by the end of the next RII funding period.

Functional Genomics Resources Consortium (FGRC) Research Highlights FY 2003-2004

Submitted by: Dr. Ulrich Melcher, FGRC Project Coordinator

The Functional Genomics Consortium was initiated with the recognition that the considerable strength in functional genomics that existed in Oklahoma was not sufficient to establish a critical mass in this field in the state. As a result, an immediate aim was to increase the number of investigators in the field in the state and encourage their interaction with others in the state. All but one of the seven projected new faculty members is now in place.

Already, laboratories have been established, are producing interesting and useful information and techniques, and are training new scientists. Most importantly, numerous interactions and collaborations are springing up. These promise to connect Oklahoma functional genomics researchers into a vibrant net-

work of scientists that can compete nationally for funding of multi-investigator, multi-disciplinary, collaborative projects.

Examples of FGRC research collaborations can be seen in the following publications:



Hugh Russell, Jr., student of Dr. Rolf Prade adjusts the position of microscope slides on a microarrayer,

“Design of High-Density Oli-

gonucleotide Array Experiments”, Eun Soo Han, University of Tulsa—Analysis of the sources of variation in microarray-based analysis of gene expression in a biologically homogeneous animal model of aging revealed that replicate experiments using the same RNA have limited value in reducing total variability. [Han ES, Wu Y, McCarter R, Nelson JF, Richardson A, Hilsenbeck SG. *J Gerontol.* 59, B306-B315 (2004)].

“404 not found: the stability and persistence of URLs published in MEDLINE”, JD Wren, University of Oklahoma—Close to 20% of websites reported in the publicly accessible abstracts of biomedical literature no longer exist causing serious problems with stability of our scientific literature. [JD Wren *Bioinformatics* 20, 668-672 (2004)].

Education & Human Resources Outreach (EHRO) News: Highlights 2004

Submitted by: Ms. Shelley D. Wear, Special Programs Coordinator

Education and outreach to faculty, post-docs and students has been a priority for the EPSCoR program in 2004.

EPSCoR sponsored an NSF Proposal Development Workshop at the University of Oklahoma, Norman campus January 9 to assist researchers with proposal writing skills. More than 70 faculty and students attended this annual workshop.

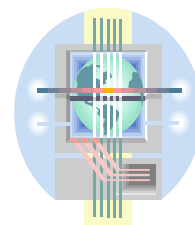
In collaboration with the State Regents Office, EPSCoR held Research Day at the Capitol on March 29, which showcased undergraduate research to the State legislature and the general public.

The event included a scientific poster competition of 20 students from 14 colleges and universities who competed for awards.

Christopher White, Oklahoma State University student took first prize, winning \$500 and a \$4000 summer research internship at an Oklahoma university of his choice. James Patterson, Langston University, won the \$500 second place prize. Jesse Bahm, Southeastern Oklahoma State University won third place and \$250. Fourth place and winner of \$100 was John Kirk, Rogers State University. Students were addressed by Governor Brad Henry, State Regent John Massey,

and Chancellor Paul Risser during the awards ceremony.

EPSCoR hosted the State's first-ever Virtual Science Fair on April 28 for K-12 students via Internet2. Sixteen students from nine schools participated in the videoconference event designed to encourage students to pursue careers in Science, Technology, Engineering, and Mathematics.



Virtual Science Fair was successfully held April 28, 2004.

Oklahoma Network for Nanostructured Materials (NanoNet) - Research Highlights 2003-2004

Submitted by: Dr. Warren Ford, NanoNet Project Coordinator

Substantial research progress has been made in nanomaterials science, especially in the area of single-walled carbon nanotube production, modification and film formation and in the area of MBE-grown laser materials.

Highlighted are results from NanoNet research in 2003-2004:

Narrow (n,m)-Distribution of Single-Walled Carbon Nanotubes Grown Using a Solid Supported Catalyst. A method for production of only three types of narrow diameter single wall carbon nanotubes in major amounts will lead to carbon nanotube materials having better defined properties. [Sergei M. Bachilo, Leandro Balzano, Jose E. Herrera, Francisco Pompeo, Daniel E. Resasco, Bruce R. Weisman. Journal of the American Chemical Society, 2003, 125, 11186-11187].

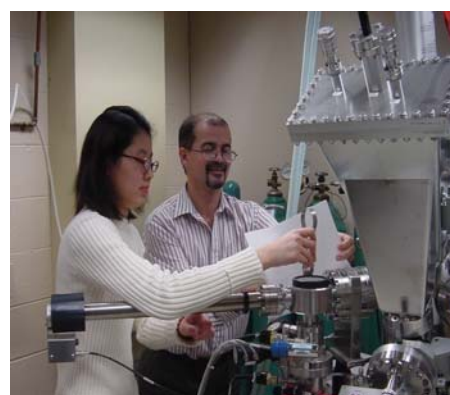
Solubilization and Purification of

Single-Wall Carbon Nanotubes in Water by In Situ Radical Polymerization of Sodium 4-Styrenesulfonate. A method for simultaneously purifying and making single wall carbon nanotubes soluble in water simplifies processing in aqueous solutions. [Shuhui Qin, Dongqi Qin, Warren T. Ford, Jose E. Herrera, Daniel E. Resasco, Sergei M. Bachilo, and Bruce Weisman. Macromolecules, 2004, (in press)].

A novel laser fabrication method, Patrick J. McCann, University of Oklahoma—A new method has been developed that transfers MBE-grown laser materials to copper allowing the fabrication of edge-emitting lasers which operate under conditions of reduced self-heating. This method will improve the performance of various diode laser technologies. [P.H.O. Pappl and P.J. McCann, IEEE Photonics Technol-

ogy Letters 15, 374-376 (2003)].

Nanostructured Artificial Nacre. Layering of polyelectrolytes and semiconductor nanoparticles forms a mimic of a tough biological material. [Zhiyong Tang, Nicholas A. Kotov, Sergei Magonov, Birol Ozturk. Nature Materials, 2003, 2, 413-418].



Dr. Daniel Resasco and Ph.D. student, Nataphan Sakuchaicharn utilize the X-ray photoelectron spectrometer (XPS) in nanomaterials research.

EPSCoR Adds Research Faculty to Strengthen the State's Infrastructure

The RII Award granted by NSF EPSCoR has contributed to the state's human research infrastructure by creating seven new faculty positions at Oklahoma research institutions.

"Functional genomics faculty added through the RII grant will strengthen the State's critical mass of researchers in the field," says Dr. Frank Waxman, State EPSCoR Director.

Faculty additions include Dr. Eun-Soo Han, Assistant Professor of Biology at The University of Tulsa, Dr. Marvin Whiteley, Assistant

*"Functional genomics
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RII grant will strengthen the
State's critical mass of
researchers in the field..."*

Professor of Botany and Microbiology, University of Oklahoma, Dr. Rammamurthy Mahalingham Assistant

Professor of Biochemistry and Molecular Biology at Oklahoma State University, Dr. Jose - Angel Conchello, Assistant Member, Oklahoma Medical Research Foundation (OMRF), and Dr. Lijun Xia, Assistant Member, OMRF. A faculty member specializing in bioinformatics at OUHSC will soon be appointed.

Visits to Oklahoma by NSF Program Officers

State Initiated Visits:

Researchers may invite NSF program officers to Oklahoma for lab visits, individual, small or large group meetings with faculty and students at no cost.

Selection of NSF Program Officers:

Contact information for appropriate NSF staff is located on the NSF website: www.nsf.gov.

Inform OK EPSCoR Offices:

Researchers should contact Dr. Frank Waxman, State EPSCoR Director, at fwaxman@osrhe.edu or Dr. James P. Wicksted, Associate Director, at jpw519@okstate.edu regarding visits planned by NSF staff. EPSCoR staff may encourage NSF officers to visit more than one lab or university while in the state.



*Experimental Program to Stimulate
Competitive Research*

We're on the Web!
Http://okepscor.org

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**Mark Your Calendar
Upcoming Events**



MAY 2004

May 13 — EPSCoR Annual
State Conference, OSU,
Stillwater, OK

JULY 2004

July 19 — NSF RII Proposal
Submission Deadline

OCTOBER 2004

October 22 — Student
Entrepreneurial Work-
shop, Presbyterian
Health Foundation
Conference Center,
OKC, OK

TBA — 2005

2005 — NSF Grants Workshop

2005 — Women in Science Con-
ference

2005 — UCO Research Day for
Regional Universities

2005 — OU Supercomputing
Symposium



**For more information on
upcoming events or other
EPSCoR programs, please
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