

Putting Science to Work

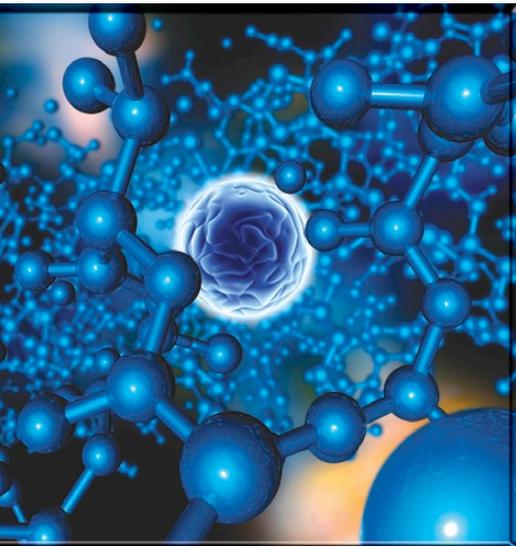
ISSUE 1 2007

Newsletter

TTED TECHNOLOGY EVENTS

Nano Competition To Debut at ORNL

The first U.S. business competition for technology entrepreneurs focused specifically on nanotechnology – Nano Nexus 2007 – will be held at ORNL April 2–4. The goal of the event, which is attracting nationwide participation from academia, industry, and the investment community, is to provide a learning environment to help accelerate the commercialization of nanotechnology.



“This event is one of several activities positioning ORNL as the nation’s leading organization for nanotechnology research, development, and education,” said Alex Fisher, the laboratory’s director of Technology Transfer. “In addition to building skill sets of entrepreneurs, we expect the event to attract new and existing companies to our region to leverage the vast resources that exist for collaborative research and development, manufacturing, and business incubation.”

The cornerstone of the April event is the Nano Idea to Product® – or I2P® – business competition for graduate students who want to commercialize new nanotechnologies. Several ORNL core and associated universities are forming teams to compete for the \$25,000 grand prize, including the University of Tennessee, Duke University, Florida State University, Georgia Institute of Technology, and the University of Texas.

(continued on page 3)



In This Issue:

TTED Technology Events
Nano Competition; TTED
Staff Lead TBA Meeting

**Building Economic
Development**
Southern Nano Network;
Regional Research
Initiative; Region’s
Bioenergy Strengths

Message from Director

Awards & Rewards
Technologies Receive FLC
Regional Awards

People in TTED News
Caldwell & Carpenter

**Impacts in Economic
Development**
Privately Funded
Technology Transfer

**Doing Research With
ORNL**
Bring Your Toughest
Industrial Problems

Other
Safety Reminder

**2006 Year-
in-Review
Insert inside.**

BUILDING ECONOMIC DEVELOPMENT

Planning Under Way for Southern Nano Network

Some 80 people from 13 states gathered in Oak Ridge in mid-October to kick off planning for the Southern Nano Network. The day-long workshop was facilitated by Jim Clinton, executive director of the Southern Growth Policies Board (SGPB) – the organization that called for the creation of the network. Participants represented academe, state and federal government, small and medium-size businesses, and economic development.

SGPB used its very successful small group brainstorming model where participants discussed the South’s strengths and weaknesses, identified and prioritized opportunities to advance the region, and developed initial actions in the high-priority areas. The goal was to find ways in which Southern states can work together to produce talent, pool resources, attract research dollars, and commercialize nanotechnologies.

(continued on page 2)

MESSAGE FROM THE DIRECTOR



Alex Fischer

ORNL's Technology Transfer and Economic Development programs marked a number of milestones in 2006. Our commercialization income reached an all-time record of more than \$2.7 million, and our commercial contract R&D services topped \$35 million, more than double the previous year's amount. Invention disclosures kept pace with 2005's record high of 167, while the number of fee-bearing licenses executed almost equaled the number for the previous year. In addition to licensing and contracting activities, UT-Battelle re-invested more than \$400,000 of royalty revenues in projects to "mature" ORNL technologies for the marketplace and garnered Battelle investment in four other ORNL technologies for the same purpose. All of these are indications of the laboratory's technology at work in the marketplace.

ORNL's "Lab of the South" efforts are gaining increased attention. Several years ago, DOE Under Secretary for Science Ray Orbach challenged ORNL to become the economic engine for the Southeastern United States. Our Southern Nano Initiative, Southeast Regional Research Initiative (homeland security), Southern Bio-energy Initiative, and two important partnerships with the Tennessee Valley Authority – the Southern Automotive R&D Initiative and our FutureNet fiber-optic partnership – have begun to take hold. ORNL is definitely on the map of policy and economic leaders throughout the South and is positioned to continue its pursuit of being a major economic contributor in the region.

Closer to home, we invested nearly \$500,000 in support of technology-based economic development in the region. The JobsNow! Partnership of the Knoxville/Oak Ridge Inno-

vation Valley is leading the State of Tennessee in new capital investment and job creation, and the new Innovation Valley Nano Alliance was launched to leverage our nanotechnology assets in the region. Technology 2020 and the Center for Entrepreneurial Growth continue to provide a regional model for technology-based economic development. Tech 2020's formation of Meritus Ventures added more than \$35 million of additional venture capital in the region, joining the Southern Appalachian Fund and Innovation Valley Partners, which has really taken off now that Glenn Kline is on board as managing partner. And lending from the Knox County Jobs and Technology Fund is at an all-time high.

We also launched the NanoNexus showcase in 2006. It will debut early this year, bringing student teams, venture capitalists, and industry executives to the ORNL campus for a showcase of nanotechnology.

Also announced in 2006 was the Oak Ridge Science and Technology Park. It is the first science and technology park on the campus of a national laboratory and holds great promise for the modernization of ORNL's west end, as well as for industry interactions and economic development.

On a sadder note, the technology transfer community lost Larry Dickens in 2006. Larry was a national leader in technology transfer, and his impacts at both ORNL and Y-12 are significant and long-lasting. His dedication to his family, his service to the community, and his passion for his work are remembered by all who knew him and had the opportunity to work with him.

As we look ahead, we are reminded of how much we have yet to accomplish and the many opportunities that lie in the future. We can't do any of it without strong partners. We appreciate all that so many of you do in support of our work.

(BUILDING ECONOMIC DEVELOPMENT continued from page 1)

Planning Under Way (cont.)

One of the small groups suggested creating a "Southern Nanotech University" that would partner Southern universities that wanted to offer multi-disciplinary programs. A second group outlined ideas to commercialize technology and fund startups across the region, while a third proposed a "Southern Governors' Nanotechnology Council" to increase the emphasis on and funding for nanotechnology.

SGPB and ORNL are working on an imple-

mentation plan for these and other suggestions outlined at the "Southern Nano Summit." The event was held about six months after SGPB issued its report, Connecting the Dots, which highlighted the South's strengths and weaknesses in nanotechnology compared to the rest of the nation. The report was funded by ORNL's Technology

Transfer and Economic Development directorate but conducted independently by SGPB and a team of researchers from the Georgia Institute of Technology.



(BUILDING ECONOMIC DEVELOPMENT continued on page 7)

(TTED TECHNOLOGY EVENTS continued from page 1)

Nano Competition (cont.)



Judging will involve representatives of well-known venture capitalists, including Harris & Harris, Battery Ventures, and Battelle Ventures.

The I2P® format, created at the University of Texas, focuses on

developing entrepreneurial skills critical for the earliest stage in the commercialization process. "It's ideal for the starting point where an idea morphs into a business," said Pat Richardson, director of Strategy and Business Development in the Office of Technology Transfer. "Imagine talking with a group of friends about your amazing invention and trying to determine if you have it in you to start a business. This is long before the business plan, when you hold the fragile idea in your mind, wondering if will interest potential customers. This competition teaches students to navigate those issues."

The University of Texas has found that the I2P® competition results in faster times to licensing revenue because it more rapidly identifies the most promising technologies

to solve a market pain point. Some 10 companies have been launched as a result of the competition since 2001.

Nano Nexus 2007 also will feature a Nano Industry Forum, where companies interested in nanotechnology applications can educate researchers on the issues they face. The event will provide opportunities to connect with organizations that can solve those challenges. Venture capitalists can learn about nanotechnology development issues and trends that will help with due diligence efforts when investigating new start-ups.

During the program's Nano Venture Showcase, the investment community will help entrepreneurs better position their companies for investment or acquisition. Nano start-up companies and the I2P® competition winner will present business plans to nanotechnology investors and potential industry partners. A feedback session will provide an educational element.

"We believe that this will be a first opportunity for a true dialogue among all of the critical players in nanotechnology commercialization: industry, government, academia, and the investment community," said Tom Rogers, president and CEO of Technology 2020, the economic development organization coordinating the event. "And it couldn't happen in a more appropriate setting – the nation's premier national laboratory in nanoscience." For more information, see www.nanonexus.org.



TENNESSEE BIOTECHNOLOGY ASSOCIATION
the Quality of Life Sciences...

TTED Staff Members Lead Sessions at TBA Meeting

Technology Transfer and Economic Development staffers Russ Miller and Casey Porto chaired key panel discussions at the 2006 annual meeting of the Tennessee Biotech Association in Nashville.

Miller, commercialization manager for Biological and Environmental Sciences, has served on the TBA board for several years. At the meeting, he facilitated the "Biotechnology Across Tennessee" panel presentation. It provided an overview of "What's New" in biotechnology business activity in Tennessee, focusing on relocations, mergers/acquisitions, new starts, financings, IPOs, licenses, etc. The level of activity in this industry sector within Tennessee is considerably higher than commonly recognized, especially outside the Knoxville region. The geographical separation of these activities was a driver behind the panel's theme of "catching up" with activity in other regions.

Panelists from across the state included Jeff Bedard, CEO of Crown Laboratories; Chuck Witkowski, CEO of Protein Discovery; Jim Frierson, executive director, Advanced

Transportation Technology Institute; Terry McIlvain, Regional Product Line leader for Perkin-Elmer; and Steve Bares, executive director of Memphis BioWorks.

The panel chaired by Porto, who serves as director of Technology Transfer, included technology transfer directors at major Tennessee research institutions and provided overviews of their institutions' research missions and approaches to tech transfer. Other panelists were John Hopkins, director of Technology Transfer, UT Knoxville; Chris McKinney, director of Technology Transfer and Enterprise Development, Vanderbilt University; Louis Svendsen, who heads technology transfer for the Tennessee Board of Regents system; and Scott Elmer, director of Technology Transfer, St. Jude Children's Research Hospital.

These organizations evaluate inventions made by their scientists and engineers and protect the intellectual property with hundreds of new patents and copyrights each year. The tech transfer organizations license this intellectual property around the world, and this resource is increasingly recognized as an economic engine for Tennessee and the Southeast. UT-Battelle, HCA, and the Biotechnology Industry Organization were major meeting sponsors.



AWARDS AND REWARDS



ORNL Technologies Receive FLC Regional Honors

Three technologies developed at ORNL have earned Excellence in Technology Awards from the Southeast Region of the Federal Laboratory Consortium for Technology Transfer.

The ORNL-developed **hybrid solar lighting** system uses a roof-mounted solar collector and small fiber optics to transfer sunlight to hybrid fixtures with electric lamps. The technology reduces energy usage for lighting and cooling because it can block ultraviolet and infrared heat. The hybrid lighting team includes David Beshears, Melissa Lapsa, Art Clemons, Dennis Earl, John Jordan, Randall Lind, Curt Maxey, Jeff Muhs, Christina Ward, and Wes Wysor of ORNL and John Morris of Sunlight Direct. The late Larry Dickens was commercialization manager.

SeizAlert is a device for alerting patients and medical personnel of impending epileptic seizures through the advanced analysis of brain waves that can be transmitted wirelessly from scalp electrodes. A SeizAlert warning enables a patient to take preventive action. A palmtop implementation has been developed by ORNL's Lee Hively, Kristopher Daley, Kara Kruse, Nancy Munro, and Vladamis Protopopescu. Brett Bosley is commercialization manager. The technology is licensed to Hercules Development Corp., whose CEO is Tracey Dedenhoff. Hercules plans a clinical trial at the Cleveland Clinic.

TMA 6301 and **TMA 4701** are heat-resistant cast austenitic stainless steels with improved durability and lifespan at higher maximum operating temperatures that have been developed using a computer-aided micro structural design methodology. The alloys will be used in the heat treatment, steel processing, chemical, and petroleum industries, resulting in energy savings. The team is composed of Govindarajan Muralidharan, Neal Evans, Ken Liu, Philip Maziasz, Michael Santella, Vinod Sikka, and Christopher Stevens of ORNL;

Roman Pankiw of Duraloy Technology; and Scott Sexton of Nucor Steel and the Indiana Sheet Metal Group. Ashok Choudhury is commercialization manager.

Earning honorable mention were:

LandScan™ 2004, a high-resolution population distribution model that provides the most accurate global population data available. The team is composed of Budhendra Bhaduri, Edward Bright, Phillip Coleman, Amy King, and Eddie Tinnel. Choudhury and Mark Reeves are commercialization managers.

MEMS-based uncooled infrared imaging, a sensitive infrared camera that uses a two-dimensional cantilever array to produce a thermal image. Team members are Thomas Thundat, Joe Cunningham, Panos Datskos, Irene Datskou, Boyd Evans, Slobodan Rajic, Eric Wachter, and Bruce Warmack of ORNL and Matt Miller and Scott Hunter of Multispectral Imaging. Russ Miller is commercialization manager.



SAFETY REMINDER

Stay alert, slow down, and stay in control — key elements to safe winter driving. Drive according to road conditions and allow extra travel time if needed. Keep a safe distance between your vehicle and the one in front of you. Avoid situations where you may have to brake suddenly on a slippery surface.

Keep your vehicle ready for winter. Maintain the battery, belts, hoses, radiator, oil, lights, brakes, exhaust system, heater/de-froster, wipers, and ignition system. Make sure your tires have sufficient tread and check tire air pressure frequently, because it decreases in colder weather.



It's also a good idea to keep your gas tank sufficiently full — at least half a tank is recommended.

Best wishes for a safe and happy 2007 from the ORNL Technology Transfer & Economic Development staff.

PEOPLE IN TTED NEWS

Caldwell, Carpenter Join TTED Staff

Recent additions to the Technology Transfer and Economic Development staff are Jennifer Caldwell, senior commercialization manager, and Jennifer Carpenter, sponsored research associate.

Caldwell spent six years with Research Corporation Technologies, Tucson, Ariz., where she executed and managed more than 130 exclusive and nonexclusive licenses and partnerships with pharmaceutical and biotechnology companies. She also created and implemented development and business plans. In TTED, Caldwell will oversee the Privately Funded Tech Transfer Portfolio, with responsibilities that include identifying technologies with commercial potential, constructing business plans, and funding development of the technologies to position them for commercialization. She holds a



Jennifer Caldwell

bachelor's degree and a doctorate in chemistry from Florida State University and the University of Florida, respectively.

Jennifer Carpenter most recently held a program management position at Florida International University's Applied Research Center. While at FIU, she successfully managed and completed the Mixed Waste Focus Area's largest Accelerated Site Technology Deployment project, which resulted in a new mixed-waste treatment being approved both in Tennessee and Utah, and in the largest volume of waste to be treated and disposed by a new technology deployment.



Jennifer Carpenter

In her new role, she is responsible for User Facility Agreements and other sponsored research agreements within the Work for Others Programs. Carpenter is a graduate of Auburn University with a BS in marine biology and is a Certified Hazardous Materials Manager.

IMPACTS IN ECONOMIC DEVELOPMENT

Privately Funded Technology Transfer Update

One of the great distinctions of a national laboratory is its emphasis on basic research. Scientific advancements can drive disruptive technology change in the marketplace, provided that there is a means to build a bridge between the science and the needs of industry, society, and government. Most commercial companies are not concerned with fundamental research unless the outcome of such research can be "bridged" to a product that the company can sell.

"Maturation" is a term used to describe that bridge – the effort to push basic science closer to market. Two sources of technology maturation funding are available to ORNL researchers. The first is royalties generated by earlier generations of technology that have made it to market. These funds are available through an annual call for proposals. The second is privately funded technology transfer (PFTT) funds – money that UT-Battelle invests in promising technologies. This multimillion-dollar commitment by UT-Battelle can be amplified by funds from the Battelle Memorial Institute, the University of Tennessee, and outside commercialization partners.

Privately funded maturation funding is available to advance a qualified promising technology as soon as it emerges. Projects are evaluated on commercial merit

without waiting for an annual proposal call. PFTT also funds the costs of patenting and marketing, covering the range of activities needed to push a new technology to market.

"Having PFTT maturation resources at our disposal lets us take a strategic perspective in building technology portfolios," said PFTT Manager Brett Bosley. "This approach can build on scientific research to deliver great commercialization outcomes. The program is building critical mass in such important areas as homeland security, energy independence, health care, and communications, and we are positioning ORNL to have an international impact with these technologies."

Projects selected for maturation activities under the PFTT program include:

- Advancement of a computational method for discovering and modeling vibrational dynamics affecting reactivity of enzymes/proteins.
- Enhancing prototype software for quantitative, risk-based determination of optimal sensor locations for public safety and environmental protection.
- Enhancing an analytical sampling technology for high-throughput analysis of tissue and other samples in connection with mass spectroscopy or as a stand-alone device.



DOING RESEARCH WITH ORNL



ORNL has 11 researchers who have been recognized as “Distinguished Inventors” by having 14 or more U.S. patents. From left, Amit Goyal, Vinod Sikka, and Parans Paranthaman.

Bring Us Your Toughest Industrial Problems

A group of ORNL Distinguished Inventors recently came to the TTED leadership team and proposed a new way of working on some of industry’s toughest technology challenges. The idea was simple enough: Could we look broadly at research opportunities across the laboratory’s scientific areas and, together, solve tough problems with industry? Could we create an “Innovation Center” – not a place, but a way of working with our scientists to expand the depth and breadth of knowledge here at ORNL – with a belief that a diverse set of backgrounds would be stronger than a single set of scientific eyes?

We developed a plan to focus on three areas:

- **Meeting Industry Challenges.** Develop relationships with industrial partners to explore their technology challenges matched to multi-disciplinary science at ORNL with the goal of future scientific collaboration.
- **Prototyping.** Build working prototypes with industrial partners with the goal of future collaboration and potential licensing opportunities.
- **Advanced Inventing.** Broaden the scope of our ideas by holding brainstorming sessions amongst our most gifted scientists to create new patentable ideas and innovative concepts for collaboration.

A successful model for this effort is for a company to begin a dialogue with the laboratory about the toughest technical problems it faces. As the company develops a list of challenges, we explore which scientists might best be able to help. By bringing together researchers with different scientific backgrounds, we may find several approaches to a problem. We may have already patented a solution, and that intellectual property could be available to license to the company.

The next step is a face-to-face meeting between the company and key ORNL scientists. The goal is a better understanding of the challenges in order to prepare a successful problem-solving strategy. It may also be beneficial for laboratory scientists to develop a “prototype” advancing their understanding of the science behind the problem, again with the goal of furthering opportunities for collaboration.

There are many ways a company can collaborate with the laboratory. ORNL is home to sophisticated experimental user facilities designed to serve staff scientists and engineers as well as researchers from universi-

ties, industry, foreign institutions, and other government labs. Work at user facilities may be conducted on a nonproprietary or proprietary basis. There also are other types of business agreements, such as a Work for Others agreement, that make ORNL’s resources and expertise available to private industry funded by the company.

We hope to use the “Innovation Center” to become an even stronger long-term scientific research partner with American industry, solving some of their toughest scientific challenges. We are not here to compete with the private sector, but to provide access to truly unique capabilities at ORNL.



(BUILDING ECONOMIC DEVELOPMENT continued from page 2)

Regional Research Initiative Receives DHS Funding

A major initiative to position the South as the model for homeland security research and commercialization is under way, thanks to funding from the U. S. Department of Homeland Security (DHS). The Southeast Regional Research Initiative, as the effort is titled, involves two directorates at ORNL – National Security and Technology Transfer and Economic Development – as well as five Mississippi research universities, the Mississippi Technology Alliance, Savannah River National Lab, Y-12 National Security Complex, and departments of homeland security in several Southern states.

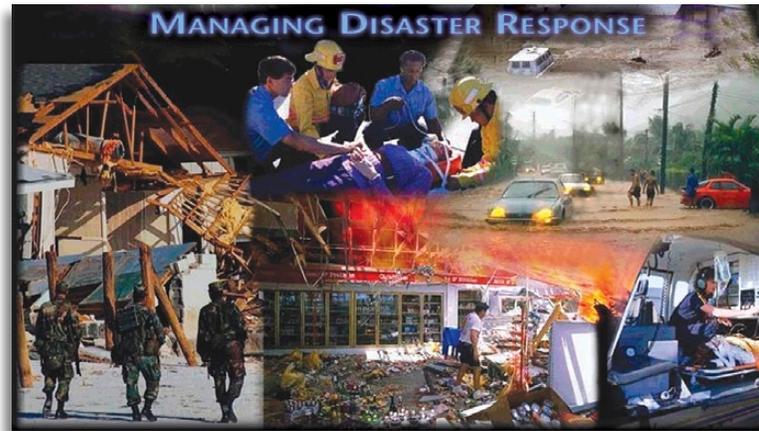
The \$25 million effort is another of the initiatives focused on positioning ORNL as the “Lab of the South” by exercising leadership in building multi-state collaboratives focused on high-priority public policy issues. The project is designed to fund the development and commercialization of new tools to benefit first responders, the local and state-based public safety organizations that are the first-line defenders in the homeland security efforts. The work

is accomplished by funding research projects clearly aligned with DHS priorities and building a network to ensure that the products resulting from the research are quickly commercialized and in the hands of the first responders.

A total of 17 projects have been funded at five Mississippi research universities at a total cost of more than \$14 million. The research focuses on a variety of areas, including rapid detection of agri-terrorism via remote sensing, development of integrated sensor systems, computational tools for water security, and real-time detection of chemicals and biological pathogens in fluids.

The Mississippi Technology Alliance will work with the universities and their researchers to ensure that entrepreneurs or companies are ready to commercialize the results of the research once ready. Simultaneously, part-time representatives in several other Southern

states will be working to help identify customers interested in commercializing homeland security products available from ORNL, other federal facilities, or universities. These same representatives also will work to identify existing companies in their states that produce products in the homeland security area, better understand their needs, and feed this information to SERRI to help drive future research priorities.



Group Examines Region’s Bioenergy Strengths

More than 80 people from throughout the South gathered in Atlanta in September for a one-day strategy session billed as the “Southern Bioenergy Retreat.”



Sponsored by the Southern Growth Policies Board (SGPB) and the Southern States Energy Board (SSEB), the retreat was funded by the Technology Transfer and Economic Development directorate at ORNL in conjunction with the Biological and Environmental Sciences directorate. The effort is the latest in a series of initiatives focused on positioning ORNL as the “Lab of the South” by exercising leadership in building multi-state public policy collaboratives.

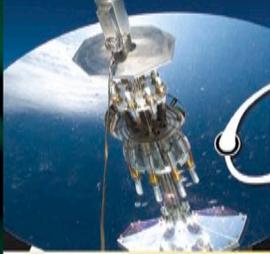
Retreat participants included academicians, research scientists, state energy officials, biomass producers, energy company executives, and non-profit representatives. They looked at the region’s strengths in bioenergy, opportunities for interstate collaborations, and strategies for developing a vibrant bioenergy industry in the South.

The group endorsed the idea of a Southern Bioenergy Research Center that would include a Biofuel Commercialization Advisory Committee to ensure that research is turned into products and a Bioenergy Research Alliance to foster ongoing collaborative research within the region.

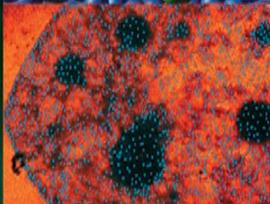
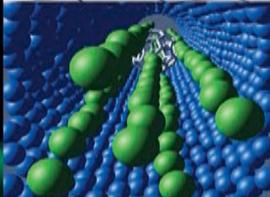
SGPB Executive Director Jim Clinton facilitated the retreat with assistance from Scott Doron, director of SGPB’s Southern Technology Council, and Charity Penock, an SGPB research analyst.



Scott Doron



TECHNOLOGY TRANSFER AND ECONOMIC DEVELOPMENT



UPCOMING EVENTS

- March 27–28 InnoVenture 2007, Greenville, S.C. For more information: www.innoventuresc.com/2007/register
- April 2–4 Nano Nexus 2007 (Oak Ridge National Laboratory). For more information: www.nanonexus.org
- April 30–May 3 2007 Spring National SBIR Conference, Research Triangle Park, N.C. For more information: www.sbtcd.org/events/sbir/2007/
- May 29–30 Tennessee Valley Corridor National Summit, MeadowView Conference Resort & Convention Center, Kingsport, Tenn. For more information: www.tennvalleycorridor.org/summits/index.html



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'06 Year-in-Review

BUILDING

ECONOMIC DEVELOPMENT

Work to Begin on Science and Technology Park

Infrastructure is under way at the new Oak Ridge Science and Technology Park. A group of federal, state, and local agencies have combined funding to ensure that necessary infrastructure like gas, water, electricity, and telecommunications are available for tenants.



Not even a dream 12 months ago, the planned 40-acre park in the central part of ORNL includes an initial 12-acre parcel that was transferred in 2006 to Halcyon, a subsidiary of the Community Reuse Organization of East Tennessee by the Department of Energy. Halcyon will,

in turn, execute long-term leases with companies and developers. The initial tenant will be Oak Ridge-based Pro2Serve, a technical and engineering services company. The company plans to invest \$15 million in a new 100,000-ft² building dubbed the National



Security Engineering Center. It will also serve as the firm's headquarters.

A Knoxville developer is also planning a second building that will provide critical space for companies interested in locating some of their R&D staff in space near ORNL researchers with whom they are collaborating. Additional buildings and a possible parking garage are planned as more land is transferred in 2007.

The park is the first of its kind to be built on a national laboratory campus. It continues ORNL's commitment to growing technology-based jobs by working with start-up entrepreneurs as well as existing companies who want to capitalize on ORNL technologies.

Tennessee SBIR Proposal Assistance Center

ORNL's involvement with the Tennessee SBIR (Small Business Innovation Research) Proposal Center, led by the University of Tennessee Center for Industrial Services, increased significantly in 2006 as the center began sponsoring activities in earnest. Two training programs in proposal preparation were conducted in various locations, including Memphis, Nashville, Oak Ridge, and Johnson City.

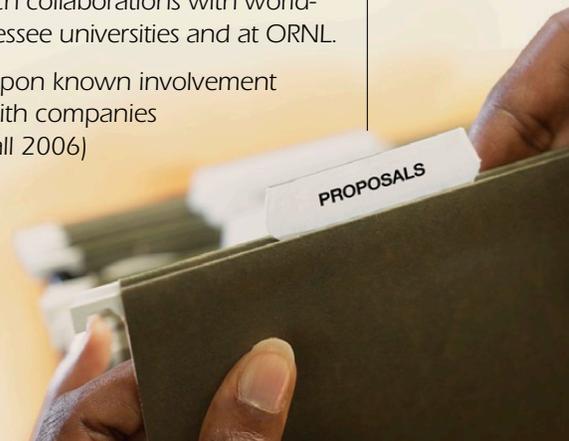
The Tennessee SBIR Proposal Assistance Center was established to assist Tennessee small businesses in winning grants/contracts from federal agencies. Eleven agencies participate in the SBIR/STTR (Small Business Technology Transfer) Program, and the budgets of the federal programs award \$2.2B annually to small businesses.

Recent figures show that Tennessee ranks 26th with respect to SBIR funding provided to companies within the state. The center's goal is to help achieve a significant increase in SBIR dollars provided to Tennessee companies by:

SBIR Proposal Center Active in 2006

- Increasing the number of proposals submitted by Tennessee companies through education about the opportunities, and
- Increasing the rate at which proposals submitted by Tennessee companies are funded by providing training and by building research collaborations with world-class resources at Tennessee universities and at ORNL.

Early indications (based upon known involvement of proposal center staff with companies submitting proposals in fall 2006) are that the training and awareness are resulting in a greater number of proposals being submitted by Tennessee companies.



PROVIDING

UNIQUE OPPORTUNITIES

User Facilities

More Researchers at Work in ORNL User Facilities

ORNL is home to 19 sophisticated experimental user facilities that advance national R&D missions while minimizing duplication of effort, promoting beneficial scientific interaction, and making the most effective use of these DOE resources. The facilities are used by scientists from ORNL, industry, academia, foreign institutions, and other government labs.

The diverse research conducted by our staff scientists, coupled with the availability of unique resource equipment, is attracting a larger and broader group of guest researchers. In FY 2006, 264 new projects were initiated, reflecting growth of 82 percent over the previous year. And 72 new agreements were executed with institutions desiring to access ORNL user facilities in FY 2006 – an increase of 15 percent.

Through TTED's management of the User Program, several major goals were achieved to increase awareness and visibility. TTED User Facility Program Manager Bill Painter participated in meetings of the Spallation Neutron Source-High Flux Isotope Reactor Users Group and the Center for Nanophase Materials Sciences. The User Facilities website was updated to provide sample user agreements and links to the facilities, and a special insert in the Summer 2006 TTED newsletter provided detailed program information. TTED also hosted a workshop for User Facility administrators, engaging stakeholders in advancing the effectiveness of these resources. These meet-

ings will become a mainstay for User Facilities administrators to exchange "best practices." Facility administrators also worked with Painter to address

concerns such as signature authority and policies in the Standards-Based Management System (SBMS) subject area. The new SBMS subject area on user facilities and procedures also was approved in a lab-wide review.

Standards Based Management System

Also in 2006, the Innovative and Novel Computational Impact on Theory and Experiment (INCITE) program



has been expanded to use the majority of computer cycle time on the Leadership Comput-

ing Facility at ORNL as well as significant allocations of high-end computing resources from three other DOE labs. Scientists from the national and international research community will be able to request computer time at ORNL, Lawrence Berkeley, Pacific Northwest, and Argonne national laboratories. The INCITE program is open to all scientific researchers and research organizations, including industry. It seeks computationally intensive projects of large scale – with no requirement of current DOE sponsorship – that can make high-impact scientific advances through the use of a large allocation of computer time and data storage. The program also allows industry to use DOE high-end computing resources as encouraged by the Council on Competitiveness.

One company that is part of the INCITE program is DreamWorks Animation SKG, producer of numerous popular animated films, including the Shrek series. DreamWorks has committed to using the world-class computing facilities at ORNL to carry out research into next-generation computer platforms to enable some of its upcoming films. Through this unique collaboration, DreamWorks will be able to explore new ground and continue to push the boundaries in animation and simulation capabilities, while DOE is able to fully utilize the considerable computing capabilities of the LCF.

Automotive R&D Is Focus of University Working Group

ORNL and about a half-dozen Southern universities continue to explore the best ways to link their complementary capabilities in ways that allow them to best serve the research and development needs of automotive manufacturers and suppliers.

Since April 2005, ORNL's Technology Transfer and Economic Development directorate and TVA's economic de-

velopment group have worked together to assemble a team of universities interested in working together to advance the amount of R&D conducted in the South. The most active participants include Alabama's main campus in Tuscaloosa as well as the Birmingham campus, Clemson, Kentucky, Mississippi State, and Tennessee. ORNL's National Transportation Research

PROVIDING UNIQUE OPPORTUNITIES continued from page 2)

AUTOMOTIVE R&D (cont.)

Center and High Temperature Materials Lab have also been engaged.

Ben Ritchey, Battelle vice president for Transportation, worked with the alliance during most of the fiscal year to better understand the individual

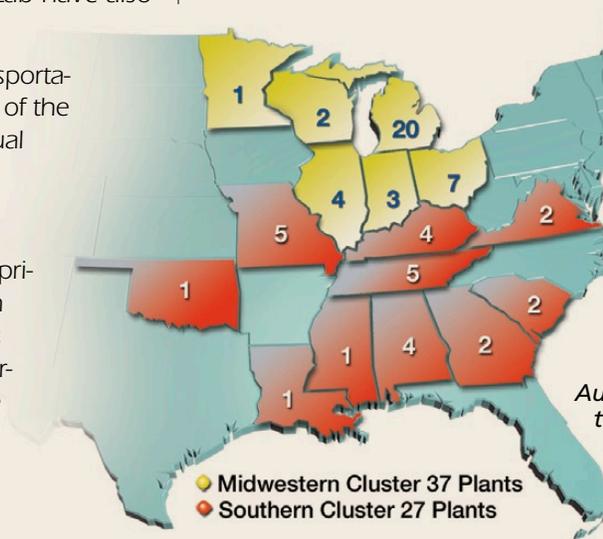


Ben Ritchey

institutional capabilities and define a strategy that preserved each institution's current proprietary relationships with automotive companies while identifying opportunities to leverage the collective capabilities and compete for more R&D work.

By the mid-August meeting of the working group in Birmingham, the president, chancellor, or chief re-

search officer at each university had committed in principle to a formal consortium. Organizational details will be addressed in early 2007.



Automotive clusters in the U.S. showing the number of plants in each state.

(BUILDING ECONOMIC DEVELOPMENT continued from page 1a)

Innovation Valley Nano Alliance Update

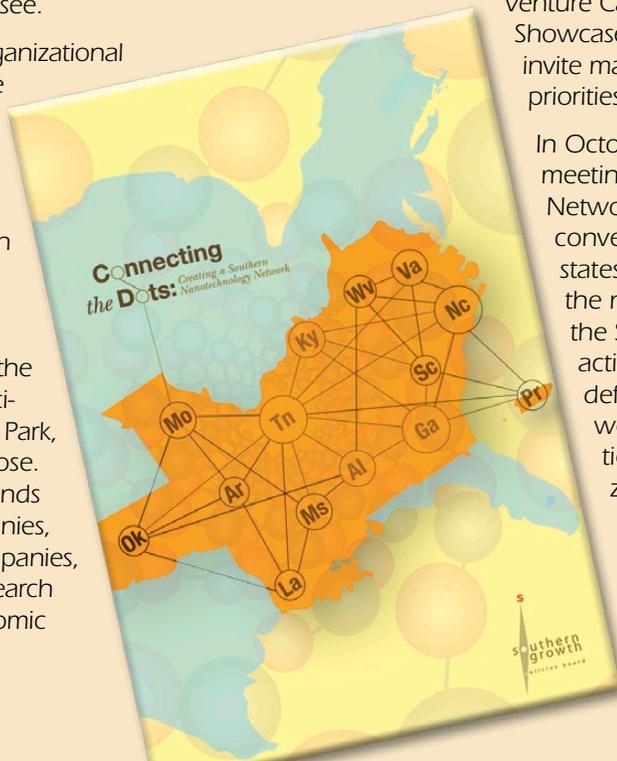
The Innovation Valley Nano Alliance continues to gain momentum. Founded by ORNL, the University of Tennessee, Y-12

National Security Complex, Knoxville-Oak Ridge Innovation Valley, and Technology 2020, the initiative was undertaken to capitalize on the region's nanoscience research facilities, talent, and intellectual property to create new nanotechnology-related businesses, jobs, and wealth in East Tennessee.

Technology 2020, organizational host and leader of the Innovation Valley Nano Alliance, is developing plans to open a Nanotechnology Commercialization Center at ORNL. DOE has announced the intent to make Bldg. 2033, located within the bounds of the new Science and Technology Park, available for the purpose. Technology 2020 intends to host private companies, including startup companies, to leverage ORNL research and facilities for economic benefit.

An exciting new undertaking by the Nano Alliance is the NanoNexus 2007 Conference planned for April. This conference will recruit interdisciplinary graduate school teams and conduct a Nano Idea to Product® Competition, conduct a

Venture Capital Showcase, and invite major industries to present their research priorities at an Industry Forum



In October, ORNL hosted the inaugural meeting of the Southern Nanotechnology Network. The Southern Technology Council convened some 80 participants from 13 states to formulate a strategy to capitalize on the nanotechnology assets and strengths of the South. The meeting identified specific actions and formed volunteer groups to define needs in the areas of talent and workforce development, commercialization and venture funding, and organization structure for a Southern Nano Network.

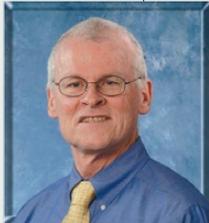
This book, which offered a framework for the creation of a Southern Nanotechnology Network, also called for a Southern Nanotechnology Institute.

PEOPLE IN TTED NEWS

TTED Staff Changes in 2006

ORNL's Technology Transfer and Economic Development Directorate continued to experience significant staff growth and changes during 2006.

Hightower



After a strategic realignment joining the patent agents and paralegals to the TTED organization at the beginning of the fiscal year, **Jud Hightower** was promoted in February to the role of Intellectual Property managing attorney. Hightower, formerly the associate general counsel for ORNL, leads the IP Legal Section as they help inventors identify new inventions and file invention disclosures and patent applications.

Kline



In April, **Glenn Kline** was named manager of Innovation Valley Partners, Battelle Ventures' affiliate fund, in Tennessee. Kline came to the firm with almost 20 years of experience in private-equity investment and venture-fund management. He previously was managing partner at Academy Funds, an early-stage venture-capital firm that he co-founded to focus on spinning out technology from major North Carolina research institutions.

Palmer



Jennifer Palmer and **Alex DeTrana** joined TTED as licensing associates in May. Palmer previously worked in ORNL's Engineering Science and Technology Division, where she was responsible for communications, marketing, and outreach projects. DeTrana came to the laboratory from Integrated Manufacturing Technology Initiative,

a Knoxville manufacturing strategy and technology road mapping firm, and previously was an intern with TTED. Palmer and DeTrana are assisting the TTED commercialization managers in identifying, evaluating, protecting, marketing, and licensing ORNL technologies.



DeTrana

Alan Liby has been with ORNL since 2004 and previously had responsibilities in both TTED and the UT/ORNL Center for Homeland Security and Counterproliferation. In July, Liby became a full-time member of the TTED organization, where he works with ORNL management, regional universities, and regional economic development organizations to develop strategies to increase industrial collaboration and business creation associated with nanotechnology and neutron science.



Liby

Constance Powell, another long-time ORNL employee, is now providing administrative support to Tom Ballard, director of Economic Development and Partnerships; Pat Richardson, director of Industrial Relationships and Strategic Planning; and Christy Griffith, director of Finance and Administration. Powell formerly supported the Laboratory Director's Office until moving to TTED full-time in May.



Powell

OUR TECHNOLOGIES

Licensing Revenues Set Record in 2006

ORNL's Technology Transfer Office experienced another record-setting year in FY06, with revenues from licensing in excess of \$2.7 million, and 167 new invention disclosures. Twenty-five new fee bearing licenses were executed, and 177 new LandScan global population data set licenses were issued at no charge to research institutions and humanitarian organizations for their use in disaster planning and recovery efforts. Other highlights include licenses to:

- Zimmer, Inc., for a joint patent between ORNL and University of Tennessee researchers for a technique enabling measurement of direct wear and force parameters in orthopedic implants,

- Worldwide Energy for ORNL innovations in advanced solid oxide fuel cell technology, and



- Koppers, Inc., for making high thermal conductivity graphite foam, which is manufactured from mesophase pitch.

The sponsored research team also pulled off a record-breaking year in terms of funds in for sponsored research, with more than \$43 million booked, representing more than double the previous year's funding total. Additionally, 124 new research contracts (Work for Others and Cooperative Research and Development Agreements) were executed in FY06, and 264 new projects were initiated at ORNL's 19 user facilities.

New research contracts included multi-year projects in Charleston, S.C., with Advanced Technology Corporation to support the National Shipbuilding Research Program in an effort to develop human amplification technology for shipboard cargo handling and transportation (projected value of \$5 million); and with the South Carolina Research Authority on Project SeaHawk, which was established to enhance intermodal transportation and port security for the Department of Justice (projected value of \$10 million).

