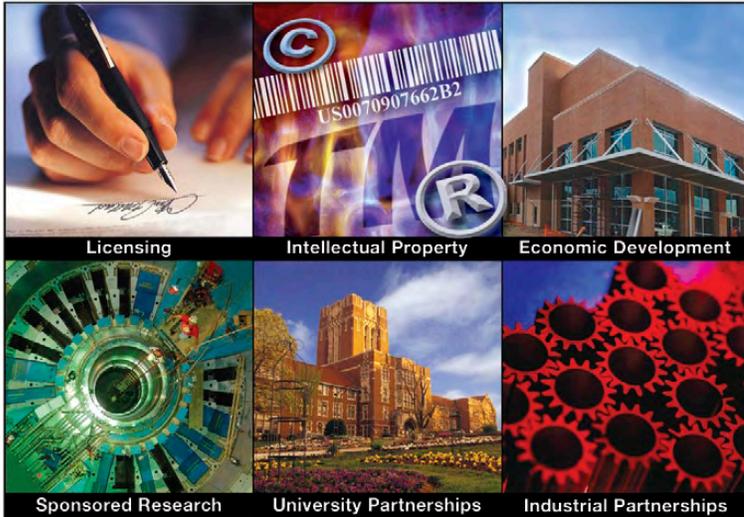


# Newsletter

*Putting Science to Work*



## New Year Brings New Name

The Technology Transfer and Economic Development group welcomed 2008 with a new name as well as a new director (see separate story below). The new name—Partnerships Directorate—captures its expanded responsibilities and the evolution of the “Lab of the South” concept.

“The new name is a reflection of the realization that strong partnerships are the major way that we contribute to economic development as well as the variety of partners we engage with in pursuit of technology commercialization and sponsored research,” said Dr. Thom Mason, Oak Ridge National Laboratory director. (continued on page 10)

## BALLARD TO LEAD PARTNERSHIPS DIRECTORATE

Tom Ballard has been named director of the Partnerships Directorate, the new name for the recently expanded Technology Transfer and Economic Development group (see article above). ORNL Director Thom Mason made the announcement in January.

Ballard joined ORNL in July 2004 after retiring from the University of Tennessee as vice president for public and governmental relations. He had been serving as TTED’s interim director since Alex Fischer’s departure in August for a full-time position as vice president for commercialization at Battelle headquarters in Columbus.

During his nearly 35-year career at UT, Ballard played a leadership role in building statewide alliances in areas ranging from telecommunications and distance learning to implementation of the Tennessee Solid Waste Management Act of 1991 and the Tennessee Growth Policy Act of 1998.



He currently serves as chair of the Oak Ridge Economic Partnership and the Tennessee Valley Corridor Foundation and is on the board of directors of the Blount County Chamber of Commerce, East Tennessee Economic Council (past chair), East Tennessee State University’s Innovation Park, Knoxville Area Chamber Partnership, National Transportation Research Center Inc., Tennessee Chamber of Commerce and Industry, Tennessee Technology Development Corporation (executive committee), and Tennessee Valley Corridor, Inc. (past chair).

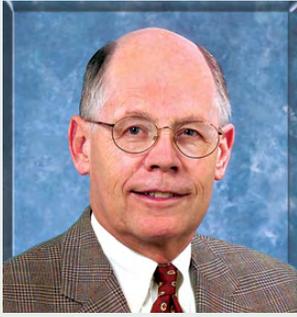
### IN THIS ISSUE

#### Special Insert: '07 Year-in-Review

<b>New Year Brings New Name</b>	1
<b>Ballard to Lead Directorate</b>	1
<b>Message from the Director</b>	2
<b>Building Economic Development</b>	
Venture Forum	2
TVC Conference	3
ORNL and OCAST	4
S&T Park Site Preparation	11
<b>People and Events</b>	
Fischer Receives Award	4
Gordon and M2M Visit	4
<b>Technology Events</b>	
Global Venture Challenge	5
<b>Spotlight on Partnerships</b>	
Technology 2020 Recognized	6
<b>Building a Technology-Based Economy</b>	
Maturation Funding	7
<b>New Faces in Partnerships Directorate</b>	
Three New Staff Members	8
<b>Impacts on Economic Development</b>	
ORNL and IVP	9
<b>Safety Reminder</b>	11
<b>Upcoming Events</b>	12
<b>Delivery Notice</b>	12

The ORNL Partnerships Directorate seeks to foster economic development and the growth of business and industry by making available the most innovative equipment, the latest technology, and the expertise of ORNL researchers to technology-based companies and research universities throughout the nation.

MESSAGE FROM THE DIRECTOR



Tom Ballard

In my previous column, I started with this statement: “Succeeding a person like Alex Fischer, even on an interim basis, is a high honor and a daunting challenge.”

Now, as the permanent leader of a newly expanded and renamed organization, I can assure you that the terms “high honor” and “challenge” are just as relevant as I

look to the future. I’m honored by the confidence and trust that ORNL Director Thom Mason has placed in me. I’m energized by the meaning of an organization that has a one word title—Partnerships—and an expanded focus. I’m challenged by the opportunities that we have to enhance ORNL and our region by creating the connections that result in win-win alliances.

When I came to ORNL in mid-2004, my assignment was simple—bring the Lab of the South concept to life. I soon recognized that a philosophy of true partnerships would be the most important ingredient in a successful rollout. UT-Battelle had developed a solid reputation among economic-development

organizations in the Knoxville–Oak Ridge region. Alex and I worked to expand our reputation to other areas through similar partnerships with their state and local economic-development organizations. We also quickly recognized the importance of alliances with southern universities and worked diligently to forge strong partnerships such as those represented by the Automotive Research Alliance and the Southeast Region Research Initiative. And we understood the importance of working alongside ORNL’s research directorates in ways that helped them build stronger R&D alliances with businesses and industries.

The renaming of the directorate and its expanded responsibilities in university partnerships and industrial relationships represent a natural progression in a strategy to ensure that ORNL is a critical partner in the emergence of a technology-based southern economy. These new roles build on our already strong foundation in intellectual-property management, licensing, sponsored research, and economic development.

The opportunities that exist are unparalleled. The base of existing partnerships is amazingly solid. How could someone not be energized and honored to accept such a challenge?

BUILDING ECONOMIC DEVELOPMENT

VENTURE FORUM FEATURES CEG CLIENTS

Five of the 15 presenters at the 11th annual Tennessee Valley Venture Forum held September 26 and 27 were clients of the Center for Entrepreneurial Growth (CEG). A joint venture between UT-Battelle and Technology 2020, CEG was established to create an entrepreneurial climate in Tennessee and improve the dissemination of Oak Ridge National Laboratory technology to small- and medium-size businesses. From its modest beginnings 11 years ago, the forum has become one of the major venture conferences in the South—and the only one in Tennessee. According to Tom Rogers, president of Technology 2020, “The feedback we have gotten, both from participants and venture capitalists, has been consistently positive. The value of the coaching we provide as part of our forum has resulted in well-prepared and high-quality presentations.”

Phenotype Screening Corporation, SunsOil LLC, and Voices Heard Media—all early-stage companies—and Protein Discovery Inc. and Tricycle Inc.—growth-stage ones—were selected from a wide array of competitors to present informa-

tion on their companies to investors at this year’s event. “This is a very competitive process,” said Shawn Carson, director of the UT-Battelle CEG program. “Applicants were selected by a panel of venture capitalists, so they all earned their spots. There were no free passes. We are very proud of our clients who were selected to present at this year’s forum.” The technologies represented by this group of companies are diverse.



BUILDING ECONOMIC DEVELOPMENT (continued from page 2)

## VENTURE FORUM CONTINUED

**Phenotype Screening Corporation** ([www.phenotypescreening.com](http://www.phenotypescreening.com)) develops scientific instruments to enable rapid discovery of key economically significant plant traits for the projected \$1 trillion-crop biotech and bio-based products market.

**SunsOil LLC** ([www.suns-oil.com](http://www.suns-oil.com)) has developed a biodiesel process technology capable of producing quality biodiesel from a variety of plentiful, inexpensive feedstocks, delivering significant cost advantages over soy-based biodiesel.

**Voices Heard Media** ([www.voices-heardmedia.com](http://www.voices-heardmedia.com)) has created a patent-pending application of natural language processing and search-engine technology to take massive numbers of questions from multiple sources and intelligently distill them into a small number of representative questions for celebrities and politicians that reflect the public's voice.



**Protein Discovery Inc.'s** ([www.proteindiscovery.com](http://www.proteindiscovery.com)) products address all categories of existing and emerging markets for biomedical mass spectrometry sample preparation, ranging from small-molecule quantification to new diagnostic discovery research to in-hospital clinical specimen testing.

**Tricycle Inc.** ([www.tricycleinc.com](http://www.tricycleinc.com)) enables sustainable design using a digital rendition of a manufactured product to provide cost savings for the product manufacturer and a more convenient process for the product specifier, while ensuring a smaller environmental footprint for the industry.

These and other emerging technology companies benefit each year from CEG's unparalleled entrepreneurial support system, which both gives smaller companies access to the scientific discoveries coming out of ORNL and helps them build the network of financial and coaching resources necessary to develop and take their innovative technologies to the marketplace. Through its work and such events as the Tennessee Valley Venture Forum, CEG is helping the Tennessee Valley Corridor become one of America's new technology hot spots.

## ORNL SHINES AT TVC CONFERENCE

ORNL's expertise in two strategic technology areas for the South was spotlighted during the Tennessee Valley Corridor (TVC) Southeastern Partnership Conference in mid-November in Greenville, South Carolina.

The event, which focused on homeland security and advanced transportation, marked the first time that the 12-year-old corridor organization had hosted anything in the Palmetto State. Since its initial summit in Oak Ridge in 1995, the TVC has held full or mini summits in Huntsville, Alabama; Somerset, Kentucky; Washington, DC; and a number of Tennessee cities.

The TVC was conceived by Tennessee Congressman Zach Wamp, who presided at the Greenville event. He was joined by Senators Jim DeMint (SC) and Jeff Sessions (AL) and South Carolina Congressmen Gresham Barrett and Bob Inglis.

During the morning session, ORNL's Warren Edwards was one of the key presenters with a focus on the existing homeland security work led by ORNL (the Southeast Region Research Initiative) as well as an emerging area called the Community and Regional Resilience Initiative that includes Charleston, South Carolina, as one of the three pilot cities.

At lunch the focus shifted to advanced transportation, and ORNL Director Thom Mason was one of the featured presenters. The



Representative Zach Wamp at the TVC conference.

afternoon sessions included presentations by Dana Christensen, associate lab director for energy and engineering sciences, and Ben Ritchey, acting president and CEO of the National Transportation Research Center Inc., administrative home of the new Automotive Research Alliance that includes Clemson University.

Building Economic Development (continued on page 4)

## OCAST ORNL and OCAST Solidify Partnership

ORNL and the Oklahoma Center for the Advancement of Science and Technology (OCAST) have tied the knot, figuratively speaking. In late September OCAST Executive Director Michael Carolina and UT-Battelle's Tom Ballard executed a Memorandum of Understanding that "serves as the basis for developing cooperative efforts between the parties for exploring research and development opportunities for Oklahoma's research institutions and advanced technology companies" in conjunction with ORNL.

"This agreement reflects the continuing evolution of ORNL's Lab of the South initiative," Ballard noted. "Oklahoma is the westernmost state among those that are members of the Southern Growth Policies Board, our strategic multistate regional partner."

He said that ORNL's Partnerships Directorate, formerly Technology Transfer and Economic Development, has developed cooperative work plans with a number of East Tennessee multicounty economic-development agencies as well as organizations such as the Tennessee Valley Corridor, Inc., which represent parts of several states, and the Mississippi Technology Alliance, which is focused on helping commercialize technologies developed by Mississippi universities as part of the Southeast Region Research Initiative. "The agreement with OCAST takes these partnership activities to a new level," Ballard said.

The MOU formalizes a growing relationship between ORNL and Oklahoma. Researchers John Simpson, Dave Geohegan, and Art Clemons are working with an Oklahoma-based company. Ballard and Alan Liby have participated in recent conferences of the Oklahoma Nanotechnology Initiative, operated out of the Oklahoma State Chamber with heavy involvement from OCAST.

The agreement drew strong praise from Oklahoma Governor Brad Henry. "The partnership between OCAST and the Oak Ridge National Laboratory will produce great benefits for Oklahoma," he said. "It will not only boost research projects here, but also enhance the outstanding national reputation already enjoyed by OCAST. This is a major accomplishment for our state."

Dan Luton, OCAST's associate director, championed the MOU and coordinated a recent visit by Ballard and Liby to explore opportunities.

Building Economic Development (continued on page11)



## Fischer Receives Postma Medal from ETEC

Alex Fischer (right), vice president for commercialization for the Battelle Memorial Institute and former ORNL director of Technology Transfer and Economic Development, received the Postma Young Professional Medal from the East Tennessee Economic Council (ETEC). Homer Fisher of the University of Tennessee presented the award at the ETEC Annual Meeting in Oak Ridge. During his tenure at ORNL, Fischer oversaw tremendous growth in commercialization activities, the development of a new science and technology park on the laboratory campus, and the implementation of a technology-focused venture capital fund with local business leaders.

## Congressman and M2M Members Visit ORNL

Tennessee Congressman Bart Gordon, chair of the house committee on science and technology, joined two dozen of his constituents visiting ORNL in late August as the guest of the Technology Transfer and Economic Development (TTED) program (now the Partnerships Directorate).



**Mind2Marketplace**  
The Vital Connection for Middle Tennessee Technologies

The Middle Tennessee Mind to Marketplace (M2M) group grew out of a challenge Congressman Gordon issued to Murfreesboro businesswoman Andrea Loughry, who also

(continued on page 7)

TECHNOLOGY EVENTS

# Global Venture Challenge

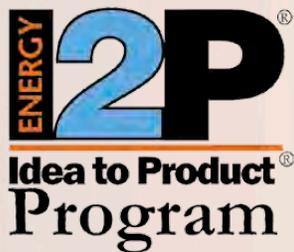
One of the world's most critical issues, energy, will be the theme of a business competition and venture forum to be held for the second year at ORNL, this time under a new name, Global Venture Challenge.

Formerly called Nano Nexus, the event has been broadened this year to embrace a wider suite of technologies coming out of research institutions and

the private marketplace. The event will be held April 2-4, 2008, at ORNL and is designed to accelerate the discovery and development of innovative ideas, with the goal of launching new entrepreneurial ventures.



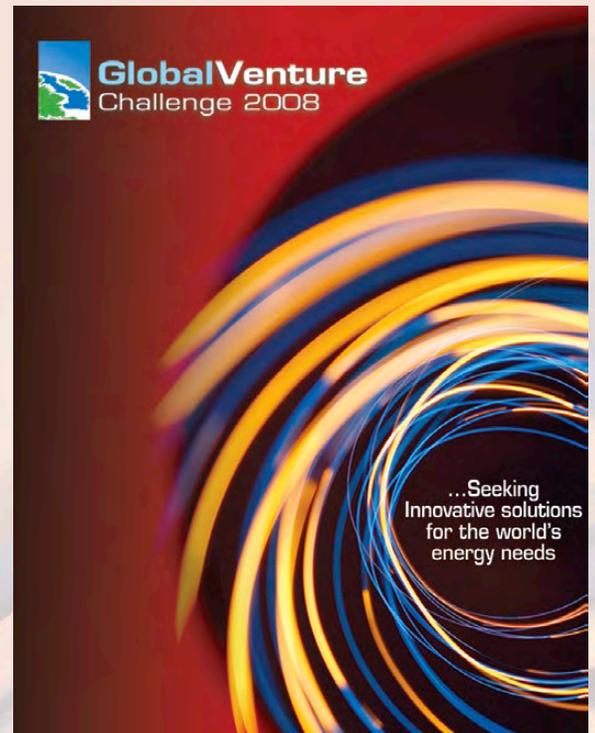
Technology 2020, a key local economic development partner of ORNL, is managing many of the functions for this year's event.



Through the event's Idea to Product Competition, 12 interdisciplinary teams of graduate-level students from universities around the world will pitch their business ideas oriented around technologies to help solve the world's growing energy problems. Team submissions will be judged by diverse panels of energy executives, venture capitalists, legal experts, researchers, and entrepreneurs. The winning team will receive at least a \$25,000 cash award.

Coupled with the competition will be the Energy Venture Showcase, in which startup companies will present their energy-related technologies to a panel of leading venture-capital investors from across the country. Last year's venture attendees represented nearly \$3 billion of capital under management.

"The Global Venture Challenge offers students and businesses a unique opportunity to rub shoulders with investors, top educators, and leaders in industry along with those in the research community who can help further their technologies," said Tom Ballard,



director of the Partnerships Directorate at ORNL. "Last year's event was a great success, attracting an impressive array of financial representatives along with university teams and startups from across the country, even from across the ocean. We remain the only national laboratory to host such an event."

Global Venture Challenge 2008 is an educational event designed to foster entrepreneurial spirit by engaging students, industry, government, and the investment community in the discovery and development of innovative ideas. The goal is to encourage students to launch new technology-based businesses that can improve the well-being of the world. For more information, see [www.globalventurechallenge.com](http://www.globalventurechallenge.com).

## SPOTLIGHT ON PARTNERSHIPS

# Technology 2020 Recognized for Excellence



In October the State Science and Technology Institute (SSTI) honored Oak Ridge-based Technology 2020 with one of only six national awards for excellence in tech-based economic development. SSTI recognized the company for its comprehensive entrepreneurial support system, which has provided assistance to more than 160 startup companies in the East Tennessee region. These client companies now employ more than 1,800 people at salaries nearly double the regional average and account for \$114 million in annual payroll in the Tennessee Valley Corridor.

Technology 2020 is a public-private partnership founded in 1995 with a mission to grow new businesses and high-quality jobs by capitalizing on the unique resources of the technology-rich East Tennessee region. Since UT-Battelle assumed management of ORNL in 2000, Technology 2020 has been a key local strategic partner in its technology-transfer efforts. Some of Technology 2020's key programs include the following:

**Entrepreneurial Support.** The mission of Technology 2020's Center for Entrepreneurial Growth (CEG) is to create an entrepreneurial climate in the state of Tennessee and improve the dissemination of ORNL and University of Tennessee-Knoxville technology through the creation and development of early-stage companies focused on growth and long-term sustainability. It uses a hands-on developmental program focused on multiple stages of growth and movement through the validations and transitions from startup to maturity and success.

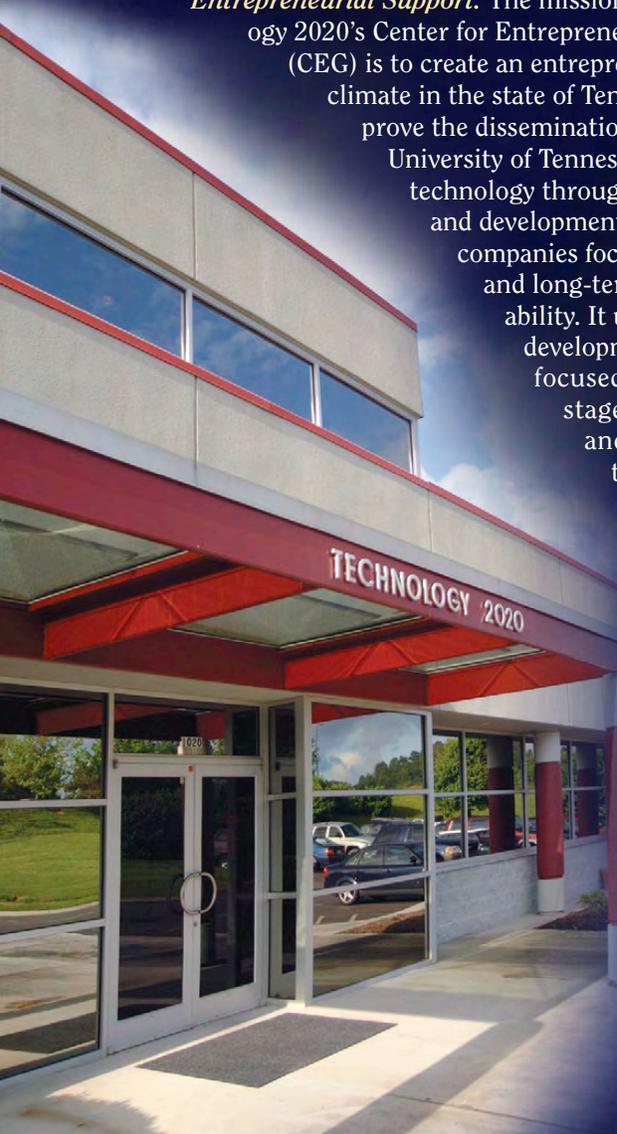
**Access to Capital.** Now in its eleventh year, the Tennessee Valley Venture Forum was one of

Technology 2020's earliest means of accessing capital initiatives by bringing investors together with promising young companies at an annual event.

Southeast Community Capital (SCC), created in 1999 to increase access to capital for small businesses in Tennessee unable to use traditional sources of financing, has provided more than \$20 million in loans to Tennessee small businesses. It recently announced the Tennessee Rural Opportunity Fund, a \$10 million pool of capital to assist small businesses in rural areas throughout the state.

The \$12.5 million Southern Appalachian Fund, established by Technology 2020 and Kentucky Highlands in 2003 as one of America's six New Markets Venture Capital Companies, focuses on early-stage companies located in low-income census tracts in Tennessee, Kentucky, and the Appalachian counties of Georgia, Alabama, and Mississippi.

The \$36 million venture capital fund Meritus Ventures makes equity investments in expansion-stage companies in rural areas of central and southern Appalachia. Meritus is America's



Tara Marlow, Tech 2020 executive director, and Tom Rogers, Tech 2020 president, winners of a 2007 SSTI award for building entrepreneurial capacity—one of six national awards for excellence in tech-based economic development.

PEOPLE AND EVENTS (continued from page 4)

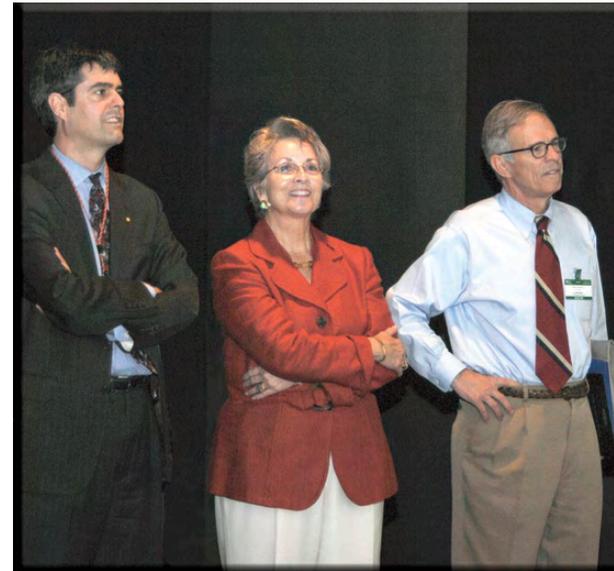
**Congressman/M2M Members Visit** *continued*

serves as vice chair of the University of Tennessee board of trustees.

For nearly 18 months, Loughry has been leading the group of mostly Middle Tennesseans exploring strategies to ensure that their area capitalizes on the rich mixture of technology assets available locally and beyond. Murfreesboro and Middle Tennessee State University were the initial focus, but the group has expanded its horizons under Loughry's leadership. TTED has been connected with the group since its creation as part of the ORNL Lab of the South initiative.

The trip to ORNL was the latest in a series of visits to technology-rich communities such as Huntsville (Cummings Research Park and the federal installations in the city), Nashville (Vanderbilt University), and Tullahoma (UT Space Institute and Arnold Engineering Development Center).

The M2M group heard from Congressman Gordon and ORNL Director Thom Mason, had a presentation by a panel of



*L to R: ORNL Director Thom Mason, UT Board of Trustees Vice Chair Andrea Loughry, and Congressman Bart Gordon.*

local economic-development organizations that regularly work with ORNL, and toured the Spallation Neutron Source and the National Leadership Computing Facility.

**BUILDING A TECHNOLOGY-BASED ECONOMY**

**Maturation Funding for FY 2008**

However compelling the technology, a gap often exists between government-funded research and its transfer to the marketplace. As a research project nears completion, federal dollars often dry up before an invention has progressed enough to be attractive to a company as a commercial product. It was for this situation that “maturation funding” was conceived. Unlike any other source of funding available to ORNL researchers, maturation funds are designated as a resource to overcome the last hurdle to commercialization—which should significantly increase the likelihood that UT-Battelle intellectual property will find its way into the marketplace. Two programs for maturation funding are available in FY 2008.

For the past 4 years, 25 percent of royalties generated from previously licensed technologies have been used for an annual technology maturation program. Proposals are solicited in early November and are due later that month. The proposals are reviewed by the members of the Invention Disclosure Review Committee (IDRC), which selects the recipients. Competition for the awards is usually quite fierce, with the committee receiving proposal requests totaling three times the amount of award money available. About ten awards averaging around \$50,000 are usually made each year. An important aspect of this process requires that proposals come from ORNL staff members who have had

(continued on page 10)

first Rural Business Investment Company.

**Technology Council.** The Innovation Valley Technology Council is a resource organization interested in helping companies prosper and promoting the use of technology to meet business needs by building an interactive association of businesses and entrepreneurs.

**Digital Crossing Networks.** Digital Crossing Networks, LLC is East Tennessee's only world-class data center with vendor-neutral telecommunications for corporate mission-critical collocation, disaster-recovery, and business-continuity needs.

**Nano Alliance.** The Innovation Valley Nano Alliance, launched in early 2005, helps the Innovation Valley capitalize on the world-class nanoscience resources and talent being assembled at ORNL, the University of Tennessee, and the Y-12 National Security Complex.

**Global Venture Challenge.** Technology 2020 is a key partner with ORNL in staging Global Venture Challenge 2008 (formerly known as Nano Nexus). This educational event is designed to foster entrepreneurial spirit by engaging students, industry, government, and the investment community in the discovery and development of innovative ideas. The ultimate goal is to encourage students to launch new technology-based businesses that can improve the well-being of the world.

**Oak Ridge Science and Technology Park.** Technology 2020 is partnering with the Community Reuse Organization of East Tennessee to offer the first facility available for occupation in the new Oak Ridge Science and Technology Park. The Nanotechnology Commercialization Center will host companies who will benefit from close R&D interaction with ORNL.

*NEW FACES IN PARTNERSHIPS DIRECTORATE*

**Coulter, Flickinger, Kendrick Now on Staff**

The ORNL Partnerships Directorate recently welcomed three new staff members: Bryan Coulter, Greg Flickinger, and Cindy Kendrick.

**Brian Coulter** joined the organization as lead finance officer. His primary role as part of the finance team is to perform budget, cost, and related financial-reporting functions in support of technology transfer and economic development activities. Bryan began his career at ORNL in 2002 as a finance officer for the Spallation Neutron Source.

Before coming to ORNL, he worked at the Y-12 National Security Complex for 9 years, during which he supported the Facilities Management Organization and Enriched Uranium Operations. Bryan has a BS degree in finance from Tennessee Tech University and an MBA from the University of Tennessee–Knoxville. Bryan resides in Maryville with his wife, Hollie, and two sons, Andrew and Graham.

**Greg Flickinger** is a new commercialization manager. He is responsible for intellectual-property portfolio management and commercialization of a broad range of ORNL physical science technologies, including those pertaining to the materials and chemical sciences.

Prior to joining the directorate, Greg held several intellectual-property development and management roles in industry, including positions with BTG International, MARKEM Corporation, and Expanse Networks. In these positions, Greg was involved in activities ranging from product design and development, strategic patent portfolio creation, and intellectual-property commercialization to licensing and new venture formation. He also worked as an operations astronomer at the Hubble Space Telescope Science Institute and was a patent examiner at the United States Patent and Trademark Office. He is a registered U.S. patent agent.

Greg earned his BS in physics and mathematics from the College of William and Mary in Virginia and his MS and PhD in physics from the University of Alabama at Birmingham. His professional affiliations include the American Physical Society, Licensing Executives Society, and American Intellectual Property Law Association.

**Cindy Kendrick** joined the technology transfer wing of the Partnerships Directorate in May 2007 as a sponsored research associate. Her focus is supporting the negotiation and execu-

tion of nonproprietary and precompetitive agreements with research partners selected to perform experiments at ORNL's user facilities.

Cindy has more than 20 years of experience directing and implementing ORNL programs in environmental remediation science and technology, waste management, and environmental compliance. From 1997 to 2004, Cindy directed ORNL's Environmental Technology Programs, a \$20 million to \$30 million science and technology portfolio, spanning work ranging from cutting-edge robotics for removal of high-level radioactive waste from deteriorating underground tanks to in situ bioremediation of soil and groundwater. Immediately prior to joining the

directorate, Cindy was the ORNL staff concerns coordinator, working with subject-matter experts and all levels of management to facilitate the early identification, prevention, and resolution of potential problems and to provide a supplementary communication channel.

Cindy holds BS degrees in chemical engineering from the University of Tennessee and in child and family studies from David Lipscomb University.

Other new faces in the directorate in 2007 included **Jennifer Caldwell**, **Jennifer Carpenter**, **Edna Gergel**, and **Marc Filigenzi**. As a senior commercialization manager, Jennifer Caldwell oversees the Privately Funded Tech Transfer Portfolio, identifying technologies with commercial potential, constructing business plans, and funding development of the technologies to position them for commercialization. Jennifer Carpenter is a sponsored research associate responsible for User Facility Agreements and other sponsored research agreements within the Work for Others programs, including those

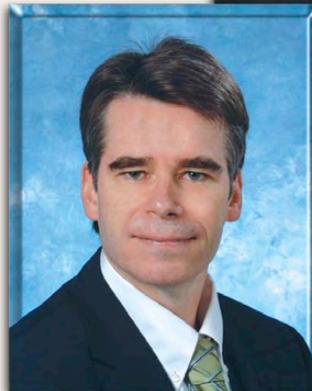
with universities, private companies, and state governments. Patent agent Edna Gergel prosecutes patent applications, oversees various law firms that are prosecuting patent applications for UT-Battelle, and works closely with inventors to obtain patent protection for their inventions. In his role as an intellectual property attorney, Marc Filigenzi assists with the management of the UT-Battelle patent portfolio and of the law firms that are prosecuting the UT-Battelle patent applications and helps review the various contracts and agreements entered into by the lab.



*Bryan Coulter*



*Cindy Kendrick*



*Greg Flickinger*

IMPACTS ON ECONOMIC DEVELOPMENT



# ORNL and IVP: FY 2007 Business Opportunities for ORNL Inventions

Innovation Valley Partners (IVP) and its affiliate fund, Battelle Ventures, L.P., have committed a combined \$8 million in financing for three recent startup companies interested in commercializing ORNL technologies.



Of these three energy-related startup

companies, Ampulse is a direct spinout of ORNL, commercializing flexible thin-film photovoltaic (PV) technologies. It is in the earliest stage of these three companies, operating as a “virtual company” out of the IVP office in Knoxville, Tennessee. The company has received more than \$1 million in pre-seed funding and is continuing research and development of PV technologies with ORNL researchers.



The second company is Aldis Corporation,

an Oak Ridge, Tennessee-based company focused on services and products for local traffic management. Aldis is targeting its services and products to a \$6.9 billion traffic-signal management and maintenance segment of the \$104 billion U.S. highway transportation market. Aldis has received \$3.775 million in Series A funding from IVP, Battelle Ventures, and Meritus Ventures. The Director of the Technology Transfer Division at ORNL, Casey Porto, explained, “Aldis is a great example of leveraging technology at ORNL with growth companies. We were approached and briefed by the firm’s general partners and the cofounders of the company and asked if there was any technology or group of researchers that could work with them to develop their idea to make markedly better traffic-management and safety systems. We were able to identify a team at ORNL that had completed considerable work on vision stabilization. While this work

was initially done for veterinary applications, it actually turned out to be extremely applicable to Aldis’s objectives.” Aldis has engaged Dr. Jim Goddard and colleagues in the Image Science and Machine Vision group at ORNL in research and development of this ORNL technology for traffic-management applications.



The third company is Orlando, Florida-based Planar Energy Devices, a power-storage company developing thin-film batteries. Planar is a spinout of the National Renewable Energy

Laboratory and has secured \$4 million of Series A venture financing from IVP and Battelle Ventures. Planar was introduced to complementary work at ORNL in the thin-film battery area, and as a result, Planar has now licensed this ORNL technology.

These three startups represent a continuation of IVP’s investment record at ORNL. IVP previously invested in two other ORNL-related companies with local connections: Multispectral Imaging, Inc. and SmartSynch. The General Partner of IVP, Glenn Kline, stated, “We have been increasingly involved in the area, participating in local business activities, networking with people involved in local entrepreneurial ventures, and really getting inside ORNL.”

Porto explained, “The funds’ general partners provide the tech community at large with a bridge into lab research and technology. At the same time, they provide qualified input to the lab about the technology/entrepreneurial community, which adds significant value to us in terms of our licensing activities.”

## Innovation Valley Challenged to Be a Knowledge Economy

At the Workforce+Education=Future event, Jim Clinton, executive director of the Southern Growth Policies Board and renowned authority on economic development in the southern United States, challenged the Knoxville area and the Innovation Valley to dramatically transform their educational system, workforce, and economy. The Innovation Valley should be a “knowledge economy” according to Clinton, seen here speaking with UT-Battelle board member Peter DeBusk (at left) after the event.



## New Year Brings New Name continued from page 1



The Partnerships Directorate will continue to house the program functions of intellectual property management, licensing, sponsored research, and economic development while adding two new areas—educational partnerships and industrial development.

Mason noted that partnerships with universities throughout the region have been a growing activity as the Lab of the South has unfolded. They include many established relationships with joint institutes, major facilities, and core universities as well as new partnerships such as the seven-university Automotive Research Alliance, the Southeast Regional Research Initiative, an initiative connecting research universities to ORNL via the FutureNet fiberoptic network, and an emerging alliance of university-based researchers in bioenergy.

“Collectively, the Partnerships group will provide a single point of contact for companies, entrepreneurs, economic-development organizations, universities, and K–12 schools that want to work with ORNL but do not know where to start,” Mason said. “I also expect the directorate to leverage relationships across this broad portfolio to advance the lab’s research agenda while building satisfied, repeat customers.”

The new organization will have three major program areas. The Technology Transfer division will continue to be led by Casey Porto, who will also serve as the directorate’s number two administrator. The University Partnerships and Industrial and Economic Development Partnerships divisions will be headed by new directors. Christy Griffith will continue to lead the finance and operations support team.

The priorities and functions in the technology transfer area won’t change. In the case of the educational partnerships area, the new directorate will serve as a “homeroom” for the activity. The new university partnerships director will also have a direct tie to the Office of the Laboratory Director in supporting the ORNL core universities and university engagements broadly across the lab and similar ties to ORNL’s Human Resources group for recruitment and the Finance directorate for minority university activities.

The existing Economic Development and Partnerships division gets a new name as well, the Industrial and Economic Development Partnerships division, reflecting the importance of developing business relationships with the private sector. The division’s staff will work with ORNL research divisions to enhance their work, while simultaneously seeking new business and industry customers who can benefit from a formal connection with the lab.

*BUILDING A TECHNOLOGY-BASED ECONOMY (continued from page 7)*

## Maturation Funding *continued*

interactions with the Technology Transfer Office via the invention disclosure process for the maturation of their already-disclosed (usually already-patented) intellectual property.

Projects are evaluated on their demonstrated path to commercialization, their relationship to existing intellectual property, and the distinctive competitive advantage achieved through the technical approach. “Demonstrated path to commercialization” means that the requested funding should be sufficient to achieve a measurable milestone in the commercialization process. The types of activities selected for maturation funding are those that advance the intellectual property or technology to a state at which it can be licensed to a commercial entity.

In most cases, this funding is the last resource expended, resulting in a license to an outside entity that could not have otherwise been achieved. These activities might include prototype development, field testing, generation of data that would be suitable to show prospective licensees, and generation



of samples. Preference is given to proposals for which a commercial company has expressed an interest in licensing the intellectual property pending the successful completion of the proposed activities.

For FY 2008 another source of maturation funding has been provided by the Energy Efficiency and Renewable Energy (EERE) division of the Department of Energy. This funding carries the same requirements as the royalty-funded maturation funding program described above, with some additional ones. The EERE Technology Commercialization and Deployment Fund (TCDF) requires that a project impact the mission of EERE to be eligible and that it carry a one-to-one match of private funding dollars for every dollar of EERE money requested. The EERE mission impact must be demonstrated in the project’s ability to reduce greenhouse gas emissions, energy intensity (i.e., reduce use of electricity, natural gas, oil, coal, or other primary energy source), or U.S. dependence on foreign sources of petroleum or natural gas and promote production of clean, renewable energy. EERE projects will be solicited in the same timeframe as the royalty-funded projects described above and will be reviewed by the IDRC plus EERE program managers.



## SAFETY REMINDER

Pleasant spring weather brings opportunities for you and your family to enjoy time playing and working in the yard, but it also can involve potential risks, particularly for children. The following springtime safety tips for outdoor chores and play are offered by the THINK FIRST Injury Prevention Program at the University of Alabama at Birmingham.

- Keep plant food, herbicides and insecticides, and fertilizers out of the reach of children.
- If your children like to help out in the yard or garden, make sure they wear protective clothing and shoes

and keep them away from power equipment.

- Children love to play “grown-up,” but be certain that they understand the differences between real tools and toy tools.
- Make sure your child is old enough before allowing him or her to mow the grass or use other tools or clippers.
- Be sure to wear long-sleeved shirts and long pants—along with protective goggles and shoes—when operating lawn mowers, edgers, weed eaters, or clippers.



*BUILDING ECONOMIC DEVELOPMENT (continued from page 4)*

## S&T Park Site Preparation Under Way

Site preparation has begun on phase one of the new Oak Ridge Science and Technology Park located along Bethel Valley Road between First and Fifth streets. The Community Reuse Organization of East Tennessee (CROET) secured a grant from the U. S. Economic Development Administration to extend utilities and prepare the site for construction. By early 2008 CROET expects construction to begin on the first two buildings in the park. The close proximity of the park to the new state-funded Joint Institute for Biological Sciences building is significant because the latter is home to the new \$125 million BioEnergy Science Center initiative funded by the Department of Energy.

The park will take the economic development commitments that UT-Battelle LLC made in 1999 to a new level. In its proposal to manage ORNL, UT-Battelle committed to doing more to ensure that the Knoxville/Oak Ridge region benefited

economically from the technologies that emerged from the lab. Since 2000 more than 75 companies have been started entirely or in large measure because of ORNL expertise.

The Oak Ridge S&T Park will be the first research park ever located within the secured perimeter of a DOE lab. As such, it clearly represents the next evolution in UT-Battelle’s commitments to building relationships that produce economic prosperity for the region. The 40-acre park will have buildings that will provide everything from incubator-type space for start-up companies to a suite of offices for researchers from Fortune 100 companies who are working on collaborative research with ORNL scientists. Regardless of the type of occupant, the park tenants will be working to bring new or enhanced products to market. As they succeed, we expect high-wage jobs to emerge and many of these companies to relocate over the long-term to space in the region’s industrial parks.

The Oak Ridge S&T Park will play an important role in ensuring that America is competitive in a global market by capitalizing on ORNL technologies.



# PARTNERSHIPS

University Partnerships



Licensing



Intellectual Property



Sponsored Research



Industrial Partnerships



Economic Development

## UPCOMING EVENTS

April 2-4

2008 Global Venture Challenge, ORNL. For more information: [www.globalventurechallenge.com/](http://www.globalventurechallenge.com/)

May 28-29

2008 Tennessee Valley Corridor Summit, Huntsville, Alabama. For more information: [www.tennvalleycorridor.org/summits/detail.html](http://www.tennvalleycorridor.org/summits/detail.html)

June 1-3

Southern Growth Policies Board Annual Conference, Little Rock, Arkansas. For more information: [www.southern.org/conference/conf.shtml](http://www.southern.org/conference/conf.shtml)

**IMPORTANT NOTICE:**

*Upcoming  
Changes to  
Newsletter Delivery*

This issue describes several significant changes; here's another that we need to mention.

In the interests of the environment and efficiency, we plan to begin distributing the newsletter electronically to as many readers as possible. We will be updating the mailing list following the distribution of this issue.

To continue receiving our newsletter, please go to <https://www.ornl.gov/tted/newsletter/subscribe.cfm>, complete the information, and indicate which delivery method you prefer. We want to keep you on our list.

**PLEASE DON'T FORGET!**



# PARTNERSHIPS

• MANAGED BY UT-BATTELLE FOR THE DEPARTMENT OF ENERGY •

Partnerships Directorate  
Oak Ridge National Laboratory  
P.O. Box 2008  
Oak Ridge, TN 37831-6196

For information, questions, and comments, contact us by one of the following: E-mail: [ORNLmeansbusiness@ornl.gov](mailto:ORNLmeansbusiness@ornl.gov)  
Web site: [www.ornl.gov/tted](http://www.ornl.gov/tted)  
Toll-free number: 866-221-2527

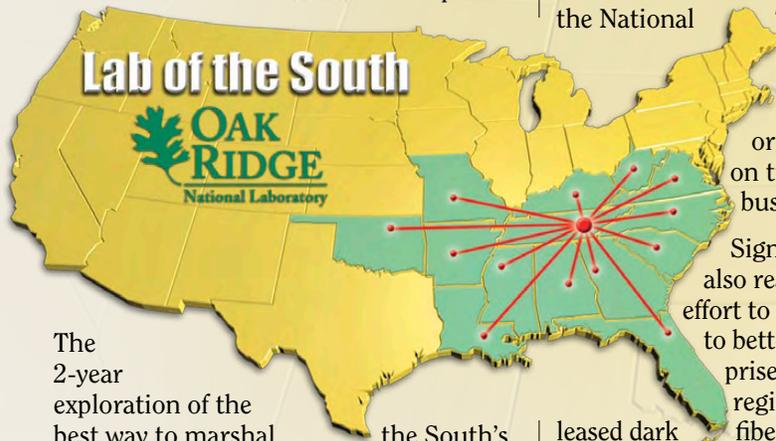
PRSR STD  
U.S. Postage  
PAID  
Permit No. 3  
Oak Ridge, TN

# '07 Year-in-Review

## PARTNERSHIPS INITIATIVE UPDATE

### Lab Expands Connections in 2007

The phrase "Lab of the South" is really a metaphor for promoting connections between ORNL and technology-focused organizations locally, regionally, and beyond. During 2007 existing initiatives continued to blossom while new ones took shape.



The 2-year exploration of the best way to marshal the South's R&D resources in the automotive sector crystallized in mid-May with the formation of the Automotive Research Alliance. Seven universities in five states joined with the Tennessee Valley Authority and ORNL in a partnership that will link each entity's resources to draw more automotive-industry-sponsored research to the region. Founding members beyond TVA and ORNL are Auburn University, the

University of Alabama at Birmingham, the University of Alabama at Tuscaloosa, Clemson University, the University of Kentucky, Mississippi State University, and the University of Tennessee. The ARA's activities will be coordinated by the National Transportation Research Center Inc., a Knoxville-based 501(c)(3) organization focused on transportation-related business development.

Significant progress was also realized in the 3-year effort to use ORNL's FutureNet to better link research enterprises in the TVA service region to the lab. Using fiber on TVA's transmission grid, FutureNet provides a robust connection through which universities and other research organizations can access ORNL's high-performance computers as well as the major national and international networks. Mississippi State secured federal funding for its connection, and Tennessee Governor Phil Bredesen included monies in the FY 2008 state budget to connect three Memphis institutions—

the UT Health Science Center, the University of Memphis, and St. Jude Children's Research Hospital. Discussions about additional connections are under way.

One of the hottest areas of interest as 2007 evolved was ORNL's building technologies group. In addition to working with the developers of the Walden Reserve community, the former Technology Transfer and Economic Development directorate helped host a number of international corporations as well as local companies and regional developers interested in energy-efficient housing.

The Southern Nanotechnology Initiative added a new dimension in late 2007 as ORNL joined with the Southern Growth Policies Board (SGPB), Roane State Community College in Tennessee, Forsyth Tech Community College in North Carolina, and other 2-year institutions exploring a multi-state nanotechnology training consortium.

Finally, SGPB and ORNL continue to explore the best strategy for the Southern Bioenergy Alliance following a summer retreat at which researchers from a dozen universities and six private corporations expressed support for continuing to meet on specific topics.

(UPDATE continued on next page)

## FOCUS ON SUCCESS

### Licensing and Sponsored Research in FY 2007

The technology transfer office had another record-setting year, with revenues from licensing in excess of \$2.9 million and 177 new invention disclosures. It executed 24 new fee-bearing licenses and issued 268 LandScan licenses at no charge to research institutions and humanitarian organizations. Highlights included

- UT-Battelle and ViaLogy entered into a license for Reverse Photo-Acoustic Spectroscopy (RePAS) technology. ViaLogy plans to combine RePAS technology, developed by ORNL researchers for chemical analysis, with its advanced processing

for detecting minute amounts of chemical, biological, radiological, nuclear, and explosive materials.



- Innovation Valley Partners and Battelle Ventures provided \$1.3 million, with another \$2.7 million committed based on milestones achieved, to power-storage company Planar Energy Devices, a licensee of ORNL technology, to develop thin-film batteries.



(continued on back page)

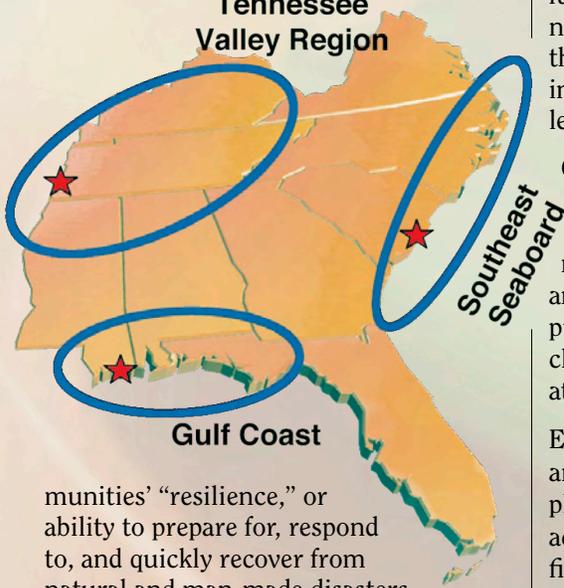
## Helping Southeast Communities Beat Disasters

A new ORNL initiative could help avert disasters in the Southeast and lead to more information about climate change. The Community and Regional Resilience Initiative (CARRI) will be implemented in Gulfport, Miss.; Memphis, Tenn.; and Charleston, S.C., to increase the com-

Tennessee Valley Region

Southeast Seaboard

Gulf Coast



munities' "resilience," or ability to prepare for, respond to, and quickly recover from natural and man-made disasters.

These "partner communities" will help develop and share knowledge, best practices, tools, and techniques to strengthen a community's ability to withstand a major disaster with minimal downtime to basic government and business services, according to CARRI director Warren Edwards.

"We will seek insights from the experiences of these communities to construct what we call a 'resiliency toolbox,'" Edwards said. "We hope to identify what communities need to be truly resilient, use that information to assess vulnerabilities in other communities, and work with them to help them close any gaps. A resilient community is prepared to help prevent or minimize the loss or damage to life, property, and the environment and more quickly return citizens to work, reopen businesses, and restore essential services needed for a full and swift economic recovery."

Edwards said the three cities were approached about participation because they are susceptible to natural and man-made disasters. "Memphis is particularly vulner-

able to earthquakes because of its proximity to the New Madrid fault line. Gulfport, of course, is in the process of recovering from Hurricane Katrina, with a strong commitment to becoming an even more resilient community in the event of future storms. Charleston has significant hurricane and earthquake threats. Having made great strides in resilience planning, the city has lessons to share."

CARRI may also provide clues to potential community response to climate change. Tom Wilbanks, ORNL Corporate Fellow and research director for CARRI, said global warming could potentially affect world weather and precipitation patterns. Government leaders are beginning to look at climate change as a national security issue and examining impacts on ecosystems and economies. "While the study's immediate purpose is to examine communities' resilience to storms, this work has implications for climate change and will help us understand how cities will respond to shifts in temperature, weather patterns, and environmental conditions that may result," Wilbanks said.

Edwards said CARRI could help communities move beyond reliance on government and first responders and draw on business, education, and civic resources to prepare, plan, and respond to disasters as efficiently and quickly as possible. CARRI will have access to national and international researchers and practitioners who can augment findings from community activities with the best information and practices available.

ORNL is further supporting CARRI through targeted technology transfer projects and through its partnership with the Southern Growth Policies Board and its Southern Technology Council, as well as virtually every research university in the Southeast, to pursue outreach and sharing of ORNL resources for the region's economic benefit. Only minimal effort and funding are required to extend the network created in this Lab of the South strategy to strengthen the regional economy while accommodating specific needs of the Department of Homeland Security.



Courtesy Josh Norman, Episcopal Relief and Development

*"Normally it is left up to us first responders to put Humpty Dumpty back together again. We can only do so much; it has to be a community effort, both government and the private sector. We didn't build our cities by government alone, and when something BIG happens, government will never be able to do it alone."*

– Fire Chief Pat Sullivan, Gulfport, Miss.



CARRI is part of the Southeast Region Research Initiative, which is funded by DHS and seeks to provide common tools and methods for anticipating and deterring terrorist attacks and enhancing disaster response for the southeastern United States.

AWARDS AND REWARDS

ORNL RESEARCHERS RECOGNIZED AT AWARDS NIGHT 2007

Researchers at ORNL won four UT-Battelle Director's Awards and the ORNL Excellence in Technology Transfer Award in 2007 as recognition for their outstanding work.



Vinod Sikka

Vinod Sikka, one of ORNL's most prolific and internationally recognized inventors, received the Director's Award for Outstanding Individual Accomplishment in Science and Technology. Sikka, whose research has resulted in 41 patents and commercial products with sales in the billions of dollars, received the award from ORNL Director Thom Mason at this year's Awards Night ceremony on November 16, 2007. "It would be difficult to find anyone to match Vinod Sikka's impact on materials-related industry," said Mason. "His work with nickel aluminides, infrared-based process heating, and computationally designed stainless steels and cast irons is unmatched in the research community."

Sikka's achievements in materials properties and processes, particularly concerning intermetallic alloys, have earned him recognition as one of the world's leading scientists in the field. His honors include ten R&D 100 awards (the most by any ORNL researcher), several Federal Laboratory Consortium awards, and The Minerals, Metals & Materials Society's Application to Practice award. Sikka was also honored with ORNL's Inventor of the Year award in 2007.

His technologies, such as the Exo-Melt process for intermetallics that brought him Department of Energy special recognition in 1996, have produced materials and processes that save industries millions of dollars through reduced energy and maintenance costs. His technologies also account for reduced process emissions. More than 60 percent of his inventions are being used commercially.



Ronald Crone

The Director's Award for Laboratory Operations went to the Research Reactor Division's Ronald Crone for his leadership in support of efforts toward the successful restart of the High Flux Isotope Reactor following its refurbishment and upgrade.

Also honored with a Director's Award for Outstanding Team Accomplishment was the ORNL team that participated in the international effort to sequence the poplar tree genome, which is regarded as a key step toward advancing biomass as an alternative energy source. The poplar tree genome sequencing team, which worked on a 5-year international effort that included ORNL and DOE's Joint Genome Institute, was led by ORNL researcher Gerald Tuskan of the laboratory's Environmental Sciences Division. Tuskan is credited by his colleagues with combining enthusiasm, organizational skills, and scientific prowess to achieve a complex scientific goal.



Members of the ORNL poplar genome team are, standing, Gerald W. Tuskan, Stan D. Wullschleger, Gwo-Liang Chen, and Frank W. Larimar; seated, Tonming Yin, Udaya C. Kaluri, Lee E. Gunter, and Ed Uberbacher. Not shown, Philip F. LoCascio.

The Engineering Science and Technology Division's Jeffrey Christian received the Director's Award for Community Service for his effective communication of building technologies research and development—most notably near-zero energy housing—to the public.



Jeff Christian

And finally, the research team of Philip Maziasz, Neal Evans, Ray Johnson, and John Shingledecker from the Materials Science and Technology Division won the Excellence in Technology Transfer Award for 2007. The team worked with original research partner Caterpillar, and later with such companies as Honeywell and General Electric, to move its CF8C-Plus, a cost-effective cast austenitic stainless steel, to industry for use in high-temperature diesel engines and gas-turbine applications.



L to R, Neal D. Evans, Philip J. Maziasz, John P. Shingledecker, and D. Ray Johnson.

(AWARDS continued on back page)

## ORNL Wins Four Excellence in Technology Transfer Awards



ORNL received four excellence in technology transfer awards, including project of the year, as well as two honorable mentions in the 2007 Southeast Region Federal Laboratory Consortium for Technology Transfer competition for transferring technologies to the private sector. The Southeast Region of the FLC covers federal labs in nine southeastern states.

IC-221M cast nickel aluminide, developed and transferred to Duraloy Technologies by ORNL's Vinod Sikka, Michael Santella,



L to R, Michael Santella, Jeffrey McNabb, and Vinod Sikka. Not shown, Ashok Choudhury.

Jeffery McNabb, and Ashok Choudhury, won project of the year. It improves the operation of heat-treating furnaces used to make steel. The material eliminates the need for frequent furnace shut-downs, provides significant energy and cost savings, and reduces carbon dioxide emissions. Roman Pankiw of Duraloy, consultant Anthony Martocci, and John Mengel of Mittal Steel shared in the award.

Other ORNL recipients of awards of excellence were

- High-performance lanthanum manganese oxide-enabled, high-temperature superconducting tape, which carries electricity through the

power grid after being cooled by liquid nitrogen. Cables made from the ORNL technology, which was licensed to SuperPower Inc., will carry more electricity more efficiently than copper cables and can be retrofitted to the underground-transmission grid infrastructure. The tape was developed by ORNL's Parans Paranthaman, Tolga Aytug, Amit Goyal, and Mark Reeves, along with Venkat Selvamanickam and X. Xiong of SuperPower.

- Automated image retrieval, developed by ORNL's Kenneth Tobin, Thomas Karnowski, and Philip Bingham, along with the late Larry Dickens and Tom Verburt of Rudolph Technologies. The system uses imaging to inspect and assess semiconductor wafers.
- Operational amplifiers for high-temperature electronics and telemetry, developed by ORNL's Charles Britton, Lloyd Clonts, Tony Moore, Nance Ericson, and Larry Dickens, along with Roger Schultz of Halliburton Energy Services. They can operate for extended periods in temperatures exceeding 200°C, making them practical for use in deep petroleum drilling.

Honorable mention went to RePAS, which uses acoustics to detect chemicals, biological compounds, explosives, or nuclear

materials. Thomas Thundat, Ali Passian, Gilbert Brown, David Hedden, Larry Senesac, and Charles Van Neste of ORNL and Ming Su of the University of Central Florida developed the technology. Russ Miller, commercialization manager, licensed the technology to ViaLogy.

The Piranha Knowledge Discovery Engine, another honorable-mention recipient, uses intelligent-agent technology and a large cluster computer to analyze large volumes of text data with unprecedented speed and accuracy. ORNL's Jim Treadwell, Mark Elmore, Brian Klump, Robert Patton, Thomas Potok, and Joel Reed developed the technology; commercialization manager Brett Bosley negotiated the license with VuBotics.

### FOCUS ON SUCCESS (continued)

## Licensing and Sponsored Research (continued)

- The Partnerships Directorate played a key role in the proposal effort leading to a DOE award to ORNL of \$135 million for a bioenergy



research center to develop new ways to produce biofuels. The proposal prominently featured technology transfer and commercialization activities—important factors in DOE's decision.

The sponsored research team had another extraordinary year with almost \$40 million of funds-in work with its industrial and university partners and 124 new research contracts (Work for Others and Cooperative Research and Development Agreements), providing a runway of \$250 million of future research projects. In addition, 180 User Agreements were executed with partners who want to conduct research at ORNL user facilities.

### Examples of New Research Contracts

- **National Institutes of Natural Sciences:** \$1.25 million project with DOE to explore issues related to fusion energy, including research into materials for use in fusion energy systems
- **DHB Armor Group Inc.:** \$600,000 project to develop and implement lightweight materials in body armor, body undercooling with biometric sensors, methods for quick release of body armor, and gelcasting as a new method for fabricating shaped body armor and housings
- **Aegis Technologies Inc.:** \$400,000 project to develop prototype sensor systems capable of determining local concentrations of specific chemicals relevant for prediction and identification of wildfires
- **NucSafe Inc.:** \$4 million project to begin work on the design of new detector systems for detection of weapons of mass destruction through active interrogation using photon-induced fission for detecting special nuclear materials and Portable Isotopic Neutron Spectroscopy-based techniques for detecting chemicals and explosives
- **Shelby County Government:** \$396,000 project to provide specialized research and technical-development expertise to the Shelby County Sheriff's Office with a mobile sensor system based on SensorNet
- **Delphi Automotive Systems:** \$3 million in-kind CRADA to explore potential to improve engine energy efficiency by up to 30% when operating on ethanol and ethanol-gasoline blends