

SCIENCE

A veteran instrument is relocated and revamped for new science

The Cold Triple Axis spectrometer (CTAX), a new addition to Oak Ridge National Laboratory’s High Flux Isotope Reactor and a complementary tool to other neutron scattering instruments at ORNL, has been dealt its first neutron at HFIR.

The CTAX uses cold neutrons from the HFIR cold source to study low-energy magnetic excitations in materials. Cold neutrons are slower than their “thermal” neutron counterparts, and are, thus, perfect for probing low-energy dynamics.

The instrument, which moves by way of air pads on an epoxy surface known as the “dance floor,” is one of only two of its kind in the United States. It will be available for users this coming spring.

“Neutrons have unique properties that make them ideally suited to study the complex atomic-scale interactions that govern the macroscopic physical and chemical properties of materials,” said Jamie Fernandez-Baca, leader of the Triple Axis group.

The types of materials studied by instruments like CTAX and the new Cold Neutron Chopper Spectrometer (CNCS) at ORNL’s Spallation Neutron Source (SNS) include energy and electronic-

technology-related materials such as those used in solar cells, data storage, batteries, superconductors and materials with potential applications in electronic devices.

“While the CNCS at SNS provides snapshots of broad ranges of energy and wave vector space, the CTAX at HFIR allows for a very detailed and focused view

of small regions of this space,” Fernandez-Baca said. “The information provided by these two types of instruments will enable us to design and make novel materials to meet technological challenges.”

Transferred from Brookhaven National Laboratory’s now closed High Flux Beam Reactor, the original CTAX instrumentation was developed by a Japanese team as part of the U.S.-Japan Cooperative Neutron Scattering program. DOE’s Office of Science funded its relocation and modification for use at ORNL.

“Neutrons have unique properties that make them ideally suited to study the complex atomic-scale interactions that govern the macroscopic physical and chemical properties of materials.”

Current scientific leader Tao Hong, installation project manager Doug Selby, and team members have now finished radiological safety testing. According to Doug, flux levels have already reached highest expectations at approximately 10-million neutrons-per square centimeter-per second.

As part of the U.S.-Japan agreement, 25 percent of the time on the CTAX will be used by ORNL and Japanese researchers for experiments performed under this collaboration. The remaining 75 percent of use will be allocated to general users from university and research institutions.

—Katie Freeman 



Front row (left to right): Dennis Connelly, Michael Hittman, Doug Bunch, Tao Hong, Wenduo Zhou, Phong Nguyen. Second row (left to right): Charles Burger, Dennis Tilley, Gary Lynn, Doug Jones, Warren Sharp, Michael Humphreys, Steve Kulan, and Barry Winn. Back row Don Sokol and Doug Selby.

Project team members not pictured: Barton Bailey, Charles Roberts, Steve Hicks, Ron Maples, Brent Taylor, Lee Robertson, Jaime Fernandez-Baca, Jeanie Vivyan, Dennis McGhee, Chris Hudak, Christopher Cox, Randy Parrish, Jerry Rodgers, Brad Lively, Gary Shepherd, and Barry Whitson.

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After retiring, Tim Myrick starts second career as science teacher



Tim helps students Rondiqua Minor (left) and Neel Martin (right) prepare seeds for observation, as part of a salinization study.

“My experience helps the students take abstract concepts they are learning and see how those are applied in real-world problems and solutions.”

During the 27 years Tim Myrick worked in Oak Ridge, a large portion of that time was spent in environmental management.

Retired six years from ORNL, Tim is still using his work experience to assist almost 100 Oak Ridge High School students in an Advanced Placement environmental sciences class.

“My experience helps the students take abstract concepts they are learning and see how those are applied in real-world problems and solutions,” Myrick says.

Tim – who also worked for a time at SAIC, in addition to his career at ORNL, Y-12 and ETTP – is working with Oak Ridge High School environmental science and microbiology teacher Deni Sobek with three classes of at least 30 students each.

“Tim gives them the opportunity to see how what they are studying in the classroom is what environmental science is all about when they get away from the classroom,” Deni says. “These students are fortunate in being helped by someone who has been working in this area his entire adult life. It gives the students a better appreciation for what they are studying.”

During a recent class, Tim was standing next to a fish tank, pointing out the different aspects of an ecosystem that can be found in that tank while talking to rotating groups of students during the class period. He worked with the students in their assigned lab groups studying the impacts of salinization on plant growth and defining a food web for the Great Smoky Mountains ecosystem.

“I’ve only worked with Tim for a few weeks, but I’ve quickly learned he enables these students to think in ways they wouldn’t ordinarily,” Deni said. “He is a

tremendous addition to our class and to our curriculum.”

Tim is particularly acquainted with most of the physical aspects of the new Oak Ridge High School. He served as the UT-Battelle project manager on construction of the renovations at the high school. It was that experience that led to his current role at the school.

“Nita Ganguly (a science teacher who has since moved on to UT) approached me about doing this about three years ago,” Tim said. “She said I was a natural fit. She was right. I never had any thoughts of being a teacher, but this has been a very rewarding experience.”

In addition to his high school duties, Tim is also active as a member of Team UT-Battelle Advisory Board. He

remains active in the Red Cross and Aid to Distressed Families of Anderson County.

As if all that weren’t enough, Tim also chairs the internationally recognized “Water of the Worlds” program that works to bring clean water to those in need. Tim’s focus is on several projects throughout the Appalachian region.

As an offshoot of his involvement with that program, Tim mentored an Oak Ridge High School team sponsored by MIT that assisted with the construction of a water treatment system in the region.

With a bachelor’s degree in nuclear engineering and a master’s in environmental engineering, Tim is grateful his scientific abilities are still useful six years after retirement.

“I feel fortunate that I was able to retire when I was 50, but I also feel fortunate in that my work experience and knowledge can be helpful in molding young people for future careers.” —Fred Strohl 🌱



Myrick.

Reporter is published for retirees of ORNL, which is managed by UT-Battelle for the U.S. Department of Energy.

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New Benefits Service Center now open

On Wednesday, Sept. 1, ORNL Benefits ‘flipped the switch’ and began the new administration of benefits. You now have access 24 hours a day, 7 days a week, to a new Benefits Service Center by calling 1-800-211-3622, as well as a new Benefits Enrollment Website. When you call, be sure to have your User ID number available which was sent via letter to you at the end of August. The Benefits Service Center utilizes this information to verify your identity. If you have misplaced the letter, they can use other information for verification.

To log on to the new Benefits Enrollment Website, go to <https://ornl.employee.com>. Enter your User ID as your Username. The first time you log on, enter your password as your birth date and the last four digits of your social security number. For example, if you were born on May 26 and the last four digits of your social security number are 1234, your Password will be 05261234. You will then be prompted to create a password for future access.

Your coverage continues with no gaps in service

No matter what you may be told by a health care provider or a benefits vendor, your coverage remains in effect, with no gaps in service. ID cards from United Health Care, CIGNA, Medco and Delta Dental have now been mailed (MetLife and VSP do not issue ID cards), so please use your new ID cards.

Issues that cannot be resolved with the medical or dental plan vendor, or through the ORNL Benefits Service Center, may be addressed by contacting the ORNL Benefits Office at 574-7474 or, if necessary, by visiting the ORNL Benefits Office at 1060 Commerce Park Drive. The office is open from 8:00 am to 4:00 pm, Monday – Friday. You can find all the mailings to date and the latest information about the new benefits administration at <http://benefits.ornl.gov/newsupdates>.



United Way campaign tops \$1 million for third year

The Lab, its employees and retirees have contributed more than \$1 million to the United Way campaign for the third consecutive year. Campaign chairman Kathy Carney said about \$900,000 was contributed by employees, and UT-Battelle contributed a corporate gift of \$100,000.

“There were more than 150 volunteers who pulled together to make this campaign come off the way it did. I had the privilege of working with each person to make this campaign a success,” added Kathy.

ORNL Director Thom Mason praised the volunteer spirit, as well. “I very much appreciate and commend ORNL’s employees and retirees, who continue to be among the region’s leading United Way contributors,” Mason said.



Thom Mason holds up a check representing this year's campaign total, with campaign chair Kathy Carney to his right and Johney Green, Jr., next year's chair, to her right.

Club ORNL events

Get the details and latest news online via <https://info.ornl.gov/sites/clubornl>. Request an XCAMS account, which will allow you to participate in these events or contact Lara James at 576-3753 or jamesla@ornl.gov.

- Oct. 7 Fall Golf Tournament
- Oct. 16-17 Abingdon & Virginia Creeper Overnight
- Oct. 23 Wahoo Ziplines
- Nov. 4 Fall Festival and Craft Show
- Nov. 6 Planetarium Trip
- Nov. 25 Scrooge - OR Playhouse
- Nov. 27 Football: UT vs. Kentucky

New Oak Ridge homes are laboratories for energy efficiency

Four East Tennessee homes completed in September showcase how scientific research can make dramatic changes in the cost of heating and cooling our homes.

A ribbon-cutting ceremony celebrated the opening of all four homes as laboratories, a major milestone of the first ZEBRAlliance project. ZEBRAlliance, a public-private partnership founded by ORNL and Schaad Companies, is both a research project and a multi-faceted, energy-efficiency education campaign.

The four houses, located in the Wolf Creek subdivision in Oak Ridge, use about 55 to 60 percent less energy than conventional houses, while maintaining similar amenities. “These homes are a great example of what can be done when we partner with industry to provide scientific solutions to real problems,” ORNL Director Thom Mason says.

Although the houses will remain unoccupied during the research period, appliance, lighting, and water use will occur automatically in the experimental homes to simulate an average family’s energy use. ORNL researchers will collect data to determine which technologies deliver the most “bang for your buck.”

The four homes were built over the past two years by Schaad Companies of Knoxville, at their own expense. Jennifer Banner, CEO of Schaad Companies, says consumers will benefit from the project’s goal to identify affordable, energy-saving options for new and existing homes.

The project team will switch out equipment, appliances and controls with the latest energy-efficient products as they become available. At the end of the 30-month research period, the houses will be offered for sale to the public.

The nation has already caught a glimpse of the new homes through an episode of “This New House” on HGTV’s DIY network. Filmed on-site in Oak Ridge, the episode explained many of the innovative construction techniques and affordable technologies that are being used and monitored in the four ZEBRAlliance houses.

“Because of the ongoing involvement from builders, designers, component manufacturers and utilities, projects like ZEBRAlliance have the ability to identify solutions and implement them with speed and scale,” says Roland Risser, program manager of the Department of Energy’s Building Technologies Program.

Rudy Shankar, TVA vice president of Technology Innovation, says TVA is interested in employing the lessons learned from the ZEBRAlliance houses to benefit a broad range of customers throughout the region.

Sponsors of the initial ZEBRAlliance project include DOE’s Building Technologies Program in the Office of Energy Efficiency and Renewable Energy, TVA, Schaad Companies, BarberMcMurry Architects, ORNL and over 30 of its industry partners. For more information, visit www.zebralliance.com.

—Morgan McCorkle 🌿

“These homes are a great example of what can be done when we partner with industry to provide scientific solutions to real problems.”



The four ZEBRAlliance homes in Oak Ridge feature highly energy-efficient technologies and building envelope designs. House 1 (seen above, right) has structural insulated panels to shelter indoor areas from the weather.



Food Fight

While breast cancer tends to be caused by a combination of factors, experts agree a healthy diet is crucial in lowering risks and preventing the disease. Here is a flavorful fare of cancer-fighting food facts.

Five a day keeps the doctor away

Experts recommend a plant-based diet, rich in vitamins and minerals. Aim for at least five servings of fruits and vegetables daily. Packed with fiber, antioxidants and phytochemicals, they can help halt cancer. Good choices are dark leafy greens, pumpkin, sweet potato, carrots, winter squash, plums, grapes, strawberries, oranges and cantaloupe. Superfruits, such as pomegranate, mangosteens, goji berries and acai berries, are high in antioxidants and can be consumed in juice form.

High-fiber whole grains can help reduce cancer-causing toxins in the body and contribute to overall good health. Decrease – or even eliminate – processed white flour and white rice products. Boost your intake of whole grains such as oats, brown rice, wild rice, quinoa, buckwheat, spelt and amaranth. *Tip: When buying whole grain cereals, opt for at least 2 grams per serving (some cereals have up to 13 grams of fiber per serving).*

Powerful proteins – Legumes, nuts and seeds

Replacing meats with beans will lower your total and saturated fat intake as well as significantly increase your consumption of fiber and other cancer-fighting phytonutrients. Toss beans in salads and soups, puree to make a dip or sandwich spread, and include them in rice and pasta dishes.

Tip: If buying canned beans, rinse before using, to reduce sodium content.

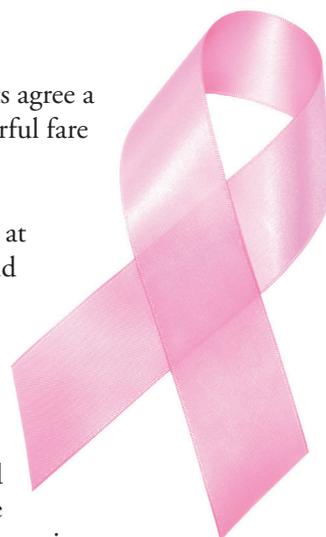
Nuts and seeds are excellent sources of vitamins, minerals and heart-healthy unsaturated fats. High in omega-3 fats, nuts and seeds – especially flax seeds – and their oils contribute to a healthy cancer-combating diet. *Tip: Choose your portions wisely, as nuts and seeds can be high in fat and calories.*

Sacrifice fat, not flavor

Flax, olive and canola oils should be used in place of butter because they are high in unsaturated fats. Flax oil is delicate and should be used in unheated dishes, like salads. Olive oil and canola can be used for sautéing, baking and broiling. *Tip: Limit your intake of fried or grilled foods to avoid excess fat and heat-induced carcinogens.*

Though research is not conclusive, some experts believe omega-3 fatty acids protect against the spread of solid-tumor cancers related to hormone production, particularly breast cancer. Regardless, omega-3-rich foods like salmon are associated with heart health and decreased inflammation. *Tip: Watch your fat content. Follow a diet that consists of no more than 20 to 30 percent unsaturated fat. Avoid products with hydrogenated, partially hydrogenated and/or trans fats. In addition, opt for low-fat dairy products, such as milk, cheese and yogurt.*

While nothing can be done to completely eliminate your risk of a breast cancer diagnosis, making healthy lifestyle choices can offer rewards far beyond cancer prevention.—*Stephanie Ritchie* 🌿



Whole Wheat Pumpkin Muffins with Cranberries and Walnuts

2 ½ C. whole wheat flour	¾ C. honey
2 t. baking powder	2 eggs
1 t. baking soda	⅔ C. buttermilk
½ t. salt	1 t. vanilla
2 ½ t. pumpkin pie spice	½ C. sweetened dried cranberries (like Craisins)
1 C. pumpkin puree (I use canned)	½ C. chopped walnuts
2 T. oil	



Preheat oven to 375 degrees. Lightly grease a standard size 12 cup muffin tin (use cooking spray). In a large bowl, whisk together flour, baking powder, baking soda, salt, and pumpkin pie spice; set aside. In a separate bowl, whisk together pumpkin, oil, honey, eggs, buttermilk and vanilla. Pour wet ingredients into dry ingredients and stir together until just combined. Fold in the cranberries and walnuts. Divide batter evenly between 12 standard sized muffin cups. Bake 20-23 minutes in a preheated 375 degree oven. Muffins are done when they spring back lightly to the touch or when a toothpick inserted in the center comes out clean.

A note when baking with whole wheat flour: Typically, baked goods might not rise as high as those made with an all-purpose flour or cake flour. To ensure you end up with a traditional “muffin top,” this recipe provides enough batter to fill your muffin cups the top. So don’t skimp.



THE NEWS

OAK RIDGE NATIONAL LABORATORY

A Publication by and for the ORNL Employees of Carbide and Carbon Chemicals Division, Union Carbide and Carbon Corporation

Vol. 3—No. 16

OAK RIDGE, TENNESSEE

Friday, October 27, 1950



DEVELOPS PROTECTIVE COATINGS—Clyde D. Watson, development engineer with the Chemical Technology Division, is shown demonstrating the handling of coating material developed under his direction to protect walls and ceilings of areas where radioactivity is present. The material can be applied to surfaces by spraying it in the same manner paint is sprayed. When it dries, it assumes a plastic, paper-like form and can be removed from a surface quickly by peeling it off.

Carbide Scientists Assume New Posts at South Charleston

Announcement of the appointment of Dr. Edward W. Rugeley, Dr. George H. Law, and Dr. Raymond W. McNamee to new responsibilities in the Carbide and Carbon Chemicals Division, Union Carbide and Carbon Corporation at South Charleston, West Virginia, has been made by Dr. Joseph G. Davidson, Division President.

Dr. Rugeley, formerly Superintendent of the Research and Development Department at South Charleston, has been appointed Technical Director of the recently formed Textile Fibers Department. Dr. Rugeley has been with the Division since 1934 and has been closely connected with textile production since his service with the U. S. Navy in World War I. A number of patents on synthetic fibers have been issued to him. He was born in Texas and received his doctorate at Yale University. He is a member of the scientific societies, Sigma Xi and Phi Lambda Upsilon, and of the Chemists Club and the American Chemical Society.

Dr. Law, former Assistant Director of Research, was appointed to the position of Associate Director of Research for Carbide and Carbon Chemicals Division. Dr. Law has been employed in the research work of the Division since he completed his graduate studies at Yale in 1929, and was prominent in the development of a new process for making ethylene glycol. At the same time, Dr. McNamee, was named Superintendent of this Department. Dr. McNamee has been connected with the Department since 1933.

Plan 3 Important A. I. Ch. E. Meetings

A busy program of activities has been arranged for meetings during the next several weeks of the Knoxville-Oak Ridge Section of the American Institute of Chemical Engineers, officials of the organization reported.

Dr. Richard M. Bizzell, ORNL Engineer, will speak at the annual meeting of the Institute to be held at the University of Tennessee on November 14. Oak Ridge Studies school, Dr. Rugeley's supervision will be stage Ion Exchange.

T. H. Chilton, of the American Institute of Chemical Engineers, will be in charge of the November 14 meeting of the Knoxville-Oak Ridge Section of the Institute. The meeting will be held at the University of Tennessee on November 14.

The election of the Knoxville-Oak Ridge Section of the American Institute of Chemical Engineers, officials of the organization reported.

On Thursday, November 14, V. Murphree, of the Standard Oil Company, will be in charge of the meeting at the University of Tennessee. Dr. Rugeley will be in charge of the meeting at the University of Tennessee.

All chemical engineers in the Knoxville-Oak Ridge Section of the American Institute of Chemical Engineers are cordially invited to attend the meetings.

Development of Methods for Radioactive Decontamination, a Chem. Tech. Project

A pioneering effort toward the development of basic theories of radioactive contamination and methods for radioactive decontamination is now in progress at Oak Ridge National Laboratory as a project of the Chemical Technology Division.

Reports of the work of the project, which originated about a year ago through the cooperative efforts of members of the Biology and Chemical Technology divisions, were recorded in articles that appeared in the August issues of two technical journals: NUCLEONICS and INDUSTRIAL AND ENGINEERING CHEMISTRY. The titles of the articles are: "Practical Aspects of Surface Decontamination", in NUCLEONICS, and "Working Surfaces for radiochemical Laboratories", in INDUSTRIAL AND ENGINEERING CHEMISTRY.

The articles were prepared by Dr. Paul C. Tompkins and Oscar M. Bizzell—both formerly associated with the Chemistry and Biology Divisions, but who are no longer members of the Laboratory staff—and Clyde D. Watson, development engineer of the Chemical Technology Division. Dr. Tompkins is now a member of the staff of the Naval Radiological Defense Laboratory at San Francisco, Calif., and Mr. Bizzell is associated with the Isotopes Division of the Atomic Energy Commission, in Oak Ridge.

At the beginning of the project, Dr. Tompkins and Mr. Bizzell furnished the basic laboratory tests and theory for its research; and Mr. Watson, assisted by G. A. West—also of the Chemical Technology Division, were responsible for the corrosion tests and allied field testing used in the work. Since Dr. Tompkins and Mr. Bizzell left the Laboratory, all of the project has been in the hands of Mr. Watson.



W. H. WINANS, Vice President, Union Carbide and Carbon Corporation, visited at the Laboratory, K-25, and Y-12 Thursday and Friday of last week and while here gave talks to several Carbide groups. Mr. Winans, who began service with the Naval Carbon Division of the Corporation in 1916, has been with the Corporation since 1916.



Early Red Feather Returns Indicate Lab to Meet Quota

If departments and divisions of the Laboratory follow precedents established early by several pace-setting units, ORNL will again go well "over the top" in meeting its quota in the Red Feather Drive for the Oak Ridge Community Chest Fund which began Monday and continues through next week.

An early Monday morning report brought the news that the Stores Department, General Office Division, had 100% participation already pledged. Then, shortly after noon Monday, came the enthusiastic report from C. E. "Red" Clayton, Supervisor of the Maintenance Department's riggers and operators, that every man in his group volunteered a donation to make it 100% for the drive. Mr. Clayton proudly related that this was all accomplished in the short space of 20 minutes.

Later on that first day of the drive it was learned that the entire General Office Division had wrapped up its campaign with a 100% participation.

Sixty years ago this month

Taken from The ORNL News for October 1950

- Dr. Larson, Director of ORNL, appointed Logan Emler Executive Director of ORNL. Mr. Emler came to the Laboratory with the DuPont Company. He assisted in the supervision in [sic] the construction of the ORNL pile and (has been) in charge of its operation since it was put into production.
- Dr. Larson appoints John Gillette Superintendent of the Radioisotope Control Department.
- Dr. Alvin Weinberg, Research Director of ORNL, appoints Dr. Briant Acting Director of the Aircraft Nuclear Propulsion (ANP) Project. The project is associated with solving the many problems and difficulties of constructing an aircraft reactor for nuclear flight.
- Delighting in the dance, the ORNL Girls Club launch a social season featuring a free-for-all "Jitter Bug" and "Charleston" dance contest.
- A pioneering effort toward the development of basic theories of radioactive contamination and methods for radioactive decontamination is now in progress at ORNL. Ongoing at the Chemical Technology Division is a project for the handling of coating material to protect walls and ceilings of areas where radioactivity is present. The material is applied to surfaces by spraying in the same manner paint is sprayed.
- A new sports interest at ORNL—"handball." Four-wall handball seems to be gaining in popularity and there is the possibility that space will be provided.

—prepared by ORNL History Room volunteers

From the Lab Director

Our fiscal, or business, year runs from October 1 to September 30. We just wrapped up a pretty remarkable fiscal year, which I summarized with ORNL managers recently in a Director's Forum.

This FY's highlights include the Laboratory's role in the discovery of the new element-117, the award of the CASL Innovation Hub to a team led by ORNL, Jaguar's remaining the world's top supercomputer, and Secretary Chu's announcement of UT-Battelle's contract extension during his visit to the Lab last March. We've seen the Lab's staff grow to nearly 4900, an increase that represents close to 500 new hires and a net of some 250 additional employees over the last twelve months.

The Director's Forum included a discussion of the contribution of \$36 million that UT-Battelle will make to the ORNL pension fund at the close of the FY 10 fiscal year. The separation of the pension fund administration from Y-12 on September 1 means that UT-Battelle now has the ability and responsibility to prudently manage the fund on behalf of current and future ORNL retirees. The very successful year we enjoyed also made it possible to provide the substantial contribution to the fund, which as of September 15 contained approximately \$1.1 billion. Our pension fund is sound, and we will continue to make the payments needed to keep it sound for current and future retirees.

One very important element in the Benefits changeover was the arrival of new insurance ID cards in your mailboxes. These are the insurance cards that you present to your caregiver and pharmacist, so make sure you have received them in the mail. The new Benefits Service Center number is 1-800-211-3622.

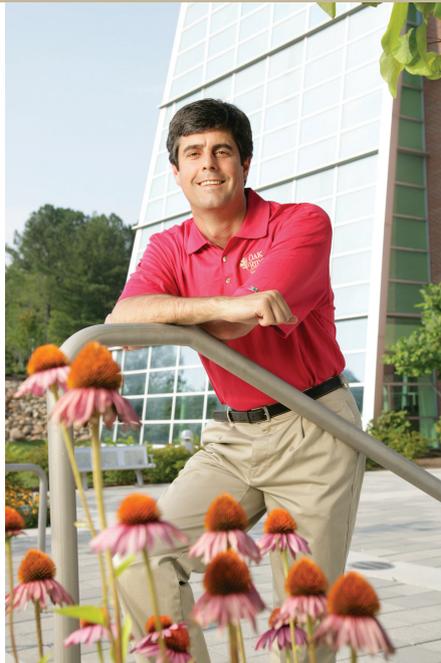
I shared some numbers ranging back to 2000, when UT-Battelle came on board at ORNL. Several costs have increased substantially during the decade. For example, the cost of fringe benefits for staff is up 155 percent, driven largely by medical and pension costs. These increases are being felt all across the business sector. The average fully burdened charge-out rate for a mid-level S&T staff member has increased 61 percent during the decade to \$362,140. In 2000 that cost was \$224,062. Nevertheless, we've reduced our indirect cost burden from 57 percent to 50 percent since 2000 by growing our base from roughly \$600 million to about \$1.6 billion.

Despite many challenges, I am optimistic about our future. Not only is ORNL well-positioned to compete for program opportunities, but we have also been preparing over the last year to take a hard look at controlling cost through a number of improved business practices.

Congratulations to United Way campaign chair Kathy Carney and ORNL staff members and retirees for once again putting ORNL over \$1 million in United Way contributions. UT-Battelle remains one of the region's leading United Way contributors, an important fact among our neighbors in the community. Thanks again to all of you who helped make this success possible.



Thom Mason



“Despite many challenges,
I am optimistic about
our future.”



Thom addresses ORNL managers at a recent director's forum.



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ORNL graphite foam keeps lights cool

A graphite foam technology developed at ORNL that extends the life of light-emitting diode lamps has been licensed to LED North America. The agreement was signed Aug. 27 by LED North America's Andy Wilhelm and ORNL Director Thom Mason.

LED North America intends to use the graphite foam to passively cool components in LED lamps, which are increasingly in demand in applications such as street lights and parking garage lighting. Using graphite foam to more efficiently manage the heat of LEDs could help extend the lamp's lifespan and lower its price, making the lamps more attractive to a broader consumer base.

"While this technology will reduce temperatures and increase the life of the LED lighting systems, what it will really do is save municipalities millions of dollars every year in replacement fixture costs as well as maintenance," said James Klett, the inventor of the graphite foam and researcher in ORNL's Materials Science and Technology Division.

Cooling LED lamps is critical to increasing their efficiency, considering that each 10-degree decrease in temperature can double the life of the lighting components. Graphite foam-cooled lights will soon be installed at the Heritage Center, a business park at East Tennessee Technology Park in Oak Ridge. 🌿



Championed as an energy-saving lighting source, LEDs are becoming more prevalent due to low energy consumption, compact size and long life expectancy.