

SCIENCE

ORNL surges ahead with 20-kilowatt wireless charging system for vehicles

A 20-kilowatt wireless charging system demonstrated at ORNL's National Transportation Research Center has achieved 90 percent efficiency at three times the rate of the plug-in systems commonly used for electric vehicles today.

This ability can help accelerate the adoption and convenience of electric vehicles. Industry partners from Toyota, Cisco Systems, Evatran and Clemson University's International Center for Automotive Research contributed to the technology development demonstrated at ORNL.

"We have made tremendous progress from the lab proof-of-concept experiments a few years ago," said Madhu Chinthavali, ORNL Power Electronics Team lead. "We have set a path forward that started with solid engineering, design, scale-up and integration into several Toyota vehicles. We now have a technology that is moving closer to being ready for the market."

ORNL's power electronics team achieved the world's first 20-kilowatt wireless charging system for passenger cars by developing a unique architecture that included an ORNL-built inverter, isolation transformer, vehicle-side electronics and coupling technologies in less than three years. For the demonstration, researchers integrated the single-converter system into an electric Toyota RAV4 equipped with an additional 10-kilowatt hour battery.

The researchers are already looking ahead to their next target of 50-kilowatt wireless charging, which would match the power levels of commercially available

plug-in quick chargers. Providing the same speed with the convenience of wireless charging could increase consumer acceptance of electric vehicles and is considered a key enabler for hands-free, autonomous vehicles. Higher power levels are also essential for powering larger vehicles such as trucks and buses.

As the researchers advance their system to higher power levels, one of their chief considerations is safety.

"The high-frequency magnetic fields employed in power transfer across a large air gap are focused and shielded,"

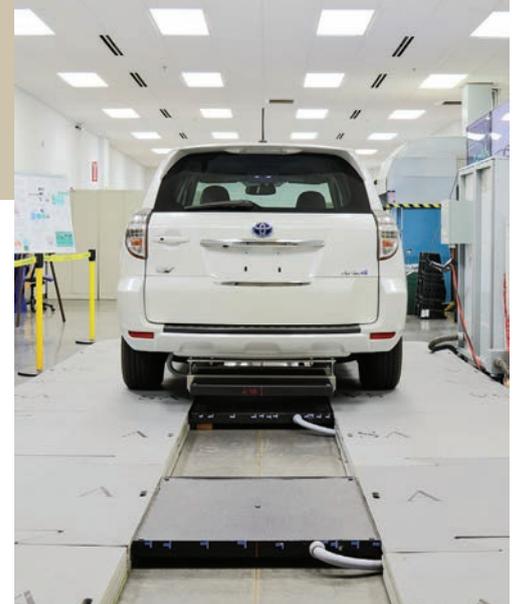
"We now have a technology that is moving closer to being ready for the market."

Chinthavali said. "This means that magnetic fringe fields decrease rapidly to levels well below limits set by international standards,

including inside the vehicle, to ensure personal safety."

Convenience and simplicity are at the heart of the ORNL system, which places a strong emphasis on radio communications in the power regulation feedback channel augmented by software control algorithms. The result is minimization of vehicle on-board complexity as ORNL and partners pursue the long-range goal of connected vehicles, wireless communications and in-motion charging. While the team's initial focus has been static or motionless wireless charging, the researchers also evaluated and demonstrated the system's dynamic charging capabilities.

Other members of the ORNL project team are current staff members Steven Campbell, Paul Chambon, Omer Onar, Burak Ozpineci, Larry Seiber, Lixin Tang, Cliff White and Randy Wiles as well as retired staff members Curt Ayers, Chester Coomer and John Miller. 🌱



ORNL's 20-kilowatt wireless charging system features 90 percent efficiency. (Photo by Jason Richards)

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Kaye Johnson displays a shark she caught during a trip to Port St. Joe, Fla.

Kaye Johnson raises kids, supports airplane gas station structure renovation in Powell

During her more than 27 years working in various capacities at ORNL, Kaye Johnson performed many tasks in different divisions and programs.

From managing the transportation technology program to work in the Chemical Technology Division to managing the Central Research Library to overseeing the American Museum of Science and Energy, Kaye was well known around ORNL.

“I wore many hats and did a lot of things over the course of 27 years,” said Kaye, who since her retirement in 2003 has made her home in Clinton.

Kaye is still wearing a few hats, including helping with the restoration of the old Airplane Gas Station along Clinton Highway in Powell and raising two children she brought home with her a few years ago.

“Most people rear their children before they retire, but Ron (her husband) and I waited to have children until our careers were over,” Kaye said laughing.

The Airplane Gas Station — it looks similar to Charles Lindberg’s Spirit of St. Louis — was constructed as a store and gasoline station in the 1930s, but sat vacant and was rotting away for years. Kaye became part of a restoration group working to save the building.

“We’re at the point where there will soon be a barber shop inside the building,” Kaye said proudly. “I’m out there at least once a month working. Our group has come a long way in saving that building for future generations.”

Kaye’s other big project is overseeing her niece and nephew, which she has done during the past eight years after obtaining legal custody.

“They really aren’t children any more,” Kaye said. “Seth is 21 and attends UT while Samantha is 15 ½ and finishing her sophomore year at Clinton High School.”

Seth is majoring in criminal justice at UT and has worked with police departments in Knoxville, Oak Ridge, Clinton and Harriman.

Samantha has participated on the volleyball and swimming teams at Clinton High School during the past two years. She will return to take part in both sports during her upcoming junior year beginning this fall. Both Samantha and Seth have athletic ability.

“When they came into my life, I gave up some of the boards I was serving on in order to focus on raising them,” Kaye said. “They are both excellent swimmers and through the years we have done the baseball, volleyball and other sports routine.”

Kaye and Ron have traveled some, but not much because of the child rearing. Kaye owned a home in Florida for several years she rented to vacationers, but no longer does so.

One board Kaye has remained a member of is serving on an advisory board for the University of Tennessee of Veterinary Medicine.

“My main focus is still Seth and Samantha,” Kaye said. “These kids are happy and healthy. They understand the value of education and they are in church. I am beyond proud of them.” —Fred Strohl 🌿

“Most people rear their children before they retire, but Ron and I waited to have children until our careers were over.”

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 865-576-3753 or jamesla@ornl.gov.



Want to receive Reporter electronically? Send your name, address as it appears on this issue and email address to strohlhf@ornl.gov if you would like to receive the newsletter as an email. You can also access the Reporter online at <http://www.ornl.gov/info/reporter/>.

United Way campaign runs all summer

ORNL’s “United In Giving” 2016 United Way campaign is under way and continues throughout the summer. As one of the largest corporate contributors to United Way in East Tennessee, ORNL’s annual campaign supports 17 East Tennessee counties.

Contributions enable United Way to bring together resources to create lasting improvements in the lives of people in our community. Each year, United Way helps thousands of people in our area through the various agencies that it supports.

Retirees are cordially invited to participate in the campaign. For information on how to authorize the deduction of a United Way contribution from your pension payment or to schedule a one-time donation, please contact Jackie Brewster of Payroll and Payment Services at 865-241-5624, brewsterjl@ornl.gov. —Ashanti B. Washington 🌿

Oak Ridger with ORNL roots earns PhD with solid waste dissertation at U. of Delaware

Scott Horton is a native Oak Ridger looking ahead to the world as a post-doc.

Born in Oak Ridge and the son of two ORNL researchers, Scott recently earned his doctorate in chemical engineering from the University of Delaware and returns there this summer as a post-doc.

Scott was part of an Oak Ridge High School team that earned first place in the 2006 Siemens Competition in Math, Science and Technology while also working five summers as an intern at ORNL.

Spending the next four years earning a chemical engineering degree at the University of Virginia, he then moved north to Delaware.

"I am very much a product of all of the science environment in Oak Ridge," Scott said in May while spending some time at home before heading back to Delaware. "The Oak Ridge and ORNL experiences have helped me reach where I'm at today."

Scott's father, Joe, was formerly senior research staff in ORNL's old Metals and Ceramics Division. His mother, Linda, held many positions at ORNL, eventually serving as the director of the Center for Nanophase Materials Sciences. Linda currently is director of DOE's Materials Science and Engineering Division in the Office of Basic Energy Science.

Scott's thesis is titled "Modeling Municipal Waste Gasification: Molecular-Level Kinetic and Software Tool."

"We're talking about trash you throw away at home and model a process that takes that trash and converts it into energy instead of burying it in a landfill," Scott

said. "The process is similar to incineration, but it produces hydrogen and carbon monoxide or synthesis gas that can then be used to produce liquid fuels or eventually electricity. The process is much

more environmentally friendly."

During his research, Scott and his team provided computer modeling expertise to Air Products and Chemicals Inc., which was building a waste process facility in the United Kingdom utilizing the technology.

Scott explained that while Japan, Great Britain and some other European nations undertake a similar technology to dispose of their solid waste, this is not the case in the United States where incineration or use of landfills are the solution.

"Japan and Great Britain subsidize waste gasification because they are located on islands and space for landfills is limited," said Scott, who hopes U.S. municipalities will study the chemical reaction process in the future.

Scott said he chose Delaware because it has a strong chemical engineering department.

"There are about 30 faculty members and there is a huge diversity of research taking place," Scott said.

The Oak Ridge native is eager about continuing as a post-doc at Delaware.

"Soon I'll start looking for a job," Scott said. "In the meantime, I'm ready to continue my research." —Fred Strobl 🌱



Scott Horton

Oak Ridge DOE Public Bus Tour in full swing for summer

DOE's Oak Ridge Public Bus Tour runs weekdays from 11:30 a.m. through 2:30 p.m. during June, July and August except for July 4-5 from the American Museum of Science and Energy.

September and October tours will run Monday, Wednesday and Friday except Sept. 5. November tours run Monday and Friday except Nov. 25. Participants must be U.S. citizens and at least 10 years old.

Registration begins at 9 a.m. each day of the tour. Online registration is available at <http://amse.org/>. For more information, call 865-576-3200.

ORNL seeks to reduce energy consumption of military B-huts

During the wars in Iraq and Afghanistan, one in eight U.S. Army casualties occurred during an attack on a refueling convoy.

Researchers led by Som Shrestha of ORNL's Energy and Transportation Science Division are working with the Army Corps of Engineers to reduce the energy consumption of barrack huts (B-huts) at forward operating bases. Using a tool called EnergyPlus, they have identified a final design that uses structural insulated panels which reduce construction time from a week to six hours and energy consumption by percent, thus lessening the frequency that dangerous resupply missions are needed.

More information is available at: <http://energy.gov/eere/buildings/articles/when-saving-energy-helps-save-lives>.

ORNL, Cincinnati Inc. sign license agreement

ORNL and Cincinnati Inc. have signed a nonexclusive licensing agreement on ORNL patents related to large-scale additive manufacturing.

Under the agreement, Cincinnati Inc. may make, use or sell ORNL's patented developments of enhanced additive manufacturing with a reciprocating platen that enables the manufacture of parts much larger and with higher quality than current standards.

"Our goal is to demonstrate the potential of large-scale additive manufacturing as an innovative and viable manufacturing technology," said Lonnie Love, leader of ORNL's Manufacturing Systems Research group. "We want to improve digital manufacturing solutions for the automotive industry." —Bill Cabage 🌱

Service Anniversaries

March 2016

40 years: **Deborah P. Stevens**, Communications; **Brad E. Nelson**, US ITER Project Office; **Delores S. Foust**, Acquisition Management Services; **Jeffrey A. Holmes**, Research Accelerator; **Jerry L. Butler**, Logistical Services

35 years: **Myra Jo B. Grayson**, Business Management Services; **D. Lynn Goins**, Utilities; **Anthony C. Duncan**, Facilities Management

30 years: **Richard T. Wood**, Reactor & Nuclear Systems; **Scotty D. Mathews**, Nuclear & Radiological Protection

25 years: **Angie R. Scott**, Computational Sciences & Engineering; **Clayton L. Carpenter**, Integrated Operations Support; **Robert B. Stephens** and **Robert C. Ausmus**, Facilities Management; **Thomas B. Richesin**, Utilities

20 years: **Connie F. Tilley**, Laboratory Protection; **Lee Robertson**, Instrument & Source

Coming in the next issue

Are you aware ORNL was a stop during the 1956 presidential election campaign? The summer issue of the ORNL Reporter will include the story.

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

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April 2016

40 years: **Jack M. Crawford Jr.**, Nonreactor Nuclear Facilities; **Gary B. Mays**, Office of Institutional Planning; **Tina J. Graves**, Logistical Services

35 years: **Terry L. Payne**, Electrical & Electronics Systems Research; **Linda T. Malone**, Computing & Computational Sciences; **Paulette McGill** and **Randal Roberts**, Laboratory Protection; **Bradley S. Richardson**, Energy & Transportation Science

30 years: **Jewel L. Brown**, Facilities Management; **Kathy W. Hylton**, Electrical & Electronics Systems Research

25 years: **Stephen E. Fisher** and **Chris A. J. McCollister**, Nuclear Security & Isotope Technology; **Shu-Jung Sears**, Materials Science & Technology; **Kevin M. Lawlor**, Facilities Management; **Greg E. Chitwood**, Office of Integrated Performance Management; **Jeff H. Shelton**, Transportation & Waste Management; **Lisa B. Kingrea**, Business Management Services; **Jerry D. Rodgers**, Research Reactors; **Roy W. Rogers**, Utilities; **Richard L. Smith**, Electrical & Electronics Systems Research; **Debbie J. Hudak**, Logistical Services

20 years: **Wayne I. Matthews**, Facilities Management; **Becky A. Wagner**, Acquisition Management; **Kenneth C. Lane**, Integrated Operations Support

May 2016

40 years: **Robert A. Anderson**, Environmental Protection Services; **Joseph A. Marasco**, Technology Transfer; **Ronnie L. Revels**, Logistical Services; **Jeff A. Patty**, Nonreactor Nuclear Facilities

35 years: **Rolf P. Migun**, Laboratory Protection; **Thomas M. Rosseel** and **Brian C. Sales**, Materials Science & Technology; **Rick Goeltz**, Energy & Transportation Science

30 years: **Cheryl J. Shanklin**, Integrated Operations Support

25 years: **James D. Freels**, **Kevin L. Shaw** and **Bennie H. Brewer II**, Research Reactors; **Chris Marcus**, Electrical & Electronics Systems Research; **Michael D. Muhlheim**, Reactor & Nuclear Systems; **John S. Defenderfer** and **B.R. Herrell**, Logistical Services; **Jeffrey A. Ball**, Research Accelerator; **Doug Loffin**, Facilities Management; **Eric S. Stroud**, Utilities

20 years: **Paul E. Lane**, Laboratory Protection; **Gregory A. Maiden**, Nuclear & Radiological Protection; **Jeff M. Pryor**, Integrated Operations Support

ORNL collaborates on U.S.-China energy-efficient building envelope technologies

LIQUIDARMOR, a sprayable liquid sealant developed by the Dow Chemical Company and evaluated at ORNL, recently won the 2016 Gold Edison Award for Building Construction & Lighting Innovations.

The Edison Awards honor the best in innovation and excellence in the development of new products and services.

The ORNL and Dow Chemical collaboration to develop and evaluate LIQUIDARMOR was funded by the U.S.-China Clean Energy Research Center for Building Energy Efficiency (CERC BEE). LIQUIDARMOR is the only one-step sprayable liquid flashing on the market that is three to four times faster to install than tape. By sealing imperfections in air barrier systems to reduce the amount of air that leaks through the building envelope, it helps decrease energy use from air-conditioning systems. Its ease of installation can also drastically reduce labor time and expenses, especially along complex geometries.—*Adrienne Weber* 🌿

THE NEWS

OAK RIDGE NATIONAL LABORATORY

A Publication for the ORNL Employees of Union Carbide Nuclear Company, a Division of Union Carbide and Carbon Corporation

Vol. 8, No. 43

OAK RIDGE, TENNESSEE

Friday, May 4, 1956

OR Metals Society Elects New Officers

Five members of Oak Ridge National Laboratory were elected to offices in the Oak Ridge Chapter of the American Society for Metals at a meeting held on April 18 in the Starlight Room of the Oak Terrace.

D. A. Douglas, Metallurgy Division, was elected president of the group for the coming year. W. O. Harms, Educational Division, was elected vice-president.

A K-25 employee, W. S. Dritt, was elected secretary of the society, and H. Inouye, ORNL Metallurgy Division, was elected treasurer.

Executive Committee

The following members of the Society were elected to serve a two-year term on the executive committee: C. J. McHargue, ORNL Metallurgy Division; M. L. Pickelsimer, ORNL Metallurgy Division; and Eric Wischhusen, J. C. White and Company.

McClurg to Speak To Testing Society

Glenn O. McClurg of the Magnaflux Corporation will address the Oak Ridge Chapter of the Society for Nondestructive Testing at a meeting in the ORINS main lecture room on Wednesday, May 9. Dr. McClurg will discuss "Basic Principles of Eddy Current Testing" at 8 PM.

Dr. McClurg received his A.B. degree from Allegheny College, Pennsylvania, in 1939. After five years with the Magnaflux Corporation and two years with Sperry Gyroscope Company, the speaker joined the staff of Illinois Institute of Technology. He later received his M.S. and Ph.D. degrees in physics from Illinois Tech. Since 1952 Dr. McClurg has been with Magnaflux, where he is now assistant director of research and development.

Refreshments will be served following the meeting.

JACKSON TO SPEAK

H. K. Jackson of the Chemical Technology Division, Oak Ridge National Laboratory, will discuss "Nuclear Fuels" as part of a session on "The Materials and Equipment of Atomic Energy" at a conference in San Antonio, Texas, May 10 and 11.

The conference, entitled "Atoms in Business," is jointly sponsored by the Southwest Research Institute and the Atomic Industrial Forum, Inc.

SAFETY SCOREBOARD

Your Laboratory Has Operated
47,804 Labor Hours
Since
Last Lost-Time Injury Through
April 29

Traveling Lectures Slated by Members

The final week of the Traveling Lecture Program will find three members of Oak Ridge National Laboratory visiting southern colleges and universities to deliver talks. The program is sponsored jointly by ORNL and the Oak Ridge Institute of Nuclear Studies.

H. O. Cohn, Physics Division, will travel to Alabama Polytechnic Institute on May 7 to speak on "V Particles." Dr. Cohn will speak on the same subject at the University of Florida on May 8 and at the University of Miami on May 10.

Griffin, Campbell Speak
P. M. Griffin, Stable Isotopes Research and Production Division, will travel to Clemson Agricultural College, South Carolina, on May 9 to speak on "New Techniques in Zeeman Spectroscopy." E. C. Campbell, Physics Division, will speak at the University of South Carolina on May 11. Dr. Campbell's subject will be "Experiments With Pulsed Neutron Sources."

DIVIDEND DECLARED

The Board of Directors of Union Carbide and Carbon Corporation recently declared a cash dividend of seventy-five cents per share on the outstanding capital stock of the Corporation. The dividend is payable June 1, 1956, to stockholders of record April 27, 1956. The last quarterly dividend was seventy-five cents per share paid March 2, 1956.

Oliver Nominated By National SNT

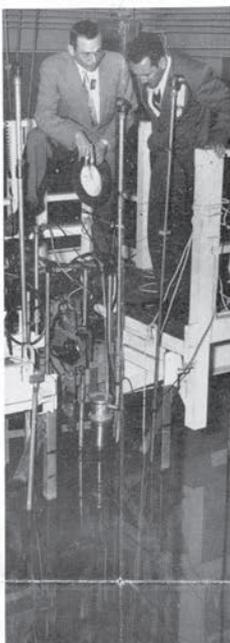
Robert B. Oliver of the Metallurgy Division, Oak Ridge National Laboratory, was recently nominated for a position on the board of directors of the National Society of Nondestructive Testing.



R. B. Oliver, secretary of the society.

The nomination for one of the two-year terms on the board is tantamount to election, since only one person is nominated for each of the positions on the national staff. The new officers and members of the board of the society will be installed at a November meeting in Chicago, Illinois.

At ORNL Since '50
Mr. Oliver, a member of the society since 1942, has been employed at Oak Ridge National Laboratory since June 1950. He has been quite active in the local chapter of the SNT. He received his B.S. degree in metallurgical engineering from Ohio State University, Columbus, in 1938 and his M.S. degree in the same subject from the University of Alabama in 1940.



PROFESSOR ARTURO A. FREIRE, director general of education...

ORNL to Be Host to Information Meeting On 'Fundamental High-Temp Chemistry'

Three Days of Information Sessions Slated For Auditorium of Main Research Building

Oak Ridge National Laboratory will be the scene of a "Fundamental High-Temperature Chemistry" meeting next Wednesday, Thursday and Friday, May 9, 10, and 11. Approximately sixty persons representing universities and research organizations across the country are expected to attend the three-day unclassified meeting which is sponsored by the Atomic Energy Commission. All sessions will be held in the auditorium of the Main Research Building at ORNL.

ORNL Represented At Health Meetings

Four members of the Health Physics Division at Oak Ridge National Laboratory attended a national meeting of the American Industrial Hygiene Association in Philadelphia, Pennsylvania, last week. T. H. Burnette, D. M. Davis, K. Z. Morgan and A. D. Warden Jr. represented the division at the four-day meeting.

Mr. Warden delivered a paper on "Potential Hazards Associated with the Sale and Smelting of Uranium-Contaminated Steel and Copper" at one of the sessions of the meeting. Another paper entitled "Chemical Dosimetry at Low Levels for Personnel Monitoring" by Lieutenant S. C. Sigoloff, Chemical Research Center, Texas, was read at the

Part I

Structure of Fused Salts. Papers by K. Fajans, University of Michigan; T. Forland, Pennsylvania State University; J. O'M. Bockris, University of Pennsylvania; S. Mitoff, General Electric Company Research Laboratory; Zevi Salsburg, Rice Institute; and P. A. Agron, M. A. Bredig, M. D. Danford, H. A. Levy and P. Sharrah, ORNL.

Part II

Equilibrium Properties of Fused Salt Systems. Papers by G. M. Pound and E. Roland, Carnegie Institute of Technology; P. W. Gilles and H. E. Robson, University of Kansas; K. A. Sense, Battelle Memorial Institute; P. A.

Sixty years ago this quarter

Taken from ORNL "The News" for Spring 1956

- Wernher von Braun, director on guided missiles at Redstone Arsenal in Alabama and developer of the German V-2 rocket during World War II, visited Oak Ridge and delivered a lecture to high school science teachers and toured ORNL.
- ORNL Director Alvin Weinberg was included as inventor in a list of 50 patents owned by the U.S. government and held by the Atomic Energy Commission. His patent covered a fast-acting control system for a neutronic reactor.
- Szent-Gyorgyi, a 1937 Nobel Prize recipient in medicine for isolating vitamin C, addressed the Oak Ridge Chapter of the Research Society of America. At the time, he was considered the world's foremost authority on the chemical physiology of muscles in living animals.
- ORNL's Radioisotope Department completed a 2,000-curie cesium-137 gamma ray source. This was the second largest source of this long-lived gamma ray emitting isotope found in the by-product of nuclear fission. Future use was expected to benefit radiography, pasteurization of foods and drugs and catalyzing chemical reactions.—prepared by ORNL History Room volunteers



Andy Skipper on a visit to Tanzania during the summer of 2015.

2014 UT-Battelle Scholar Andy Skipper eyes career as a doctor in his future

Two years removed from earning the 2014 UT-Battelle Scholarship to the University of Tennessee, Andy Skipper is seriously considering a career in medicine.

“During the past year, I’ve visited Tanzania and Peru,” Andy said as he was finishing the spring semester to conclude his sophomore year. “Between going to Tanzania last summer and Peru in December, I have come to see there is a critical need for providing decent medical care around the world. I think this is something I would like to do.”

Andy, who is majoring in chemical and biomolecular engineering, is the son of David and Maria Skipper, who are both employed at ORNL. David works for the Environmental Protection Services Division and Maria works in the Business Management Services Division.

“My plan originally was to major in biomedical engineering,” Andy said. “However, I moved to chemical and biomolecular because it focuses on more of the biology that is important to medicine and less on the physics and mechanics involved with biomedical engineering.”

Andy got a head start in college while still a student at Oak Ridge High School as he was able to take some advanced placement courses before ever setting foot on the UT campus. Andy said getting those early courses finished as soon as possible is advice he would give to any high school student who has the opportunity.

“College can be tough and time consuming,” Andy said. “It’s not easy, but the experience is still rewarding. The fact I got those AP classes behind me makes it easier as I move forward.”

While focused on his chemical and biomolecular major, Andy has also taken classes in genetics.

“If you’re thinking of working in a hospital or chemical engineering, genetics is interesting,” Andy said.

Living in an apartment in Knoxville, Andy finds time to break away from his studies to visit his parents in Oak Ridge, as well as his grandparents – Franklin and Margie Skipper – in Clinton. Margie worked more than 27 years at ORNL.

Halfway through UT, Andy is already focusing on applying to medical school even though he has two more years as an undergraduate.

“This is the time to get serious about it,” Andy said. “Right now, I’m primarily looking at UT and Vanderbilt.”

Andy is hopeful he may be able to work with doctors who travel internationally to treat patients, such as Knoxville-based Remote Area Medical. —Fred Strohl 🌱

“... I have come to see there is a critical need for providing decent medical care around the world.”

FORNL is an advocate of ORNL’s scientific goals

Friends of ORNL (FORNL) is a non-profit organization of persons interested in fostering the scientific goals of ORNL.

The group is composed of scientists and engineers, as well as individuals from varied backgrounds who believe in increasing the nation’s technological awareness by providing information to teachers, students and the general public.

Everyone is invited to FORNL’s luncheon meetings, which are held at 11:30 a.m. during the second Tuesday of each month except December at the University of Tennessee Resource Center, 1201 Oak Ridge Turnpike. There is always a guest speaker.

Board members are Jim Rushton, president; Barry Berven, vice president and program chair; Herb Krause, secretary; and Vinod Sikka, treasurer.

More information about FORNL is available at <http://fornl.info/>.

CORRE meets monthly on third Wednesday

The Coalition of Oak Ridge Retired Employees (CORRE) meets at 10 a.m. during the third Wednesday of each month at the ATLC meeting hall, 109 Viking Road, Oak Ridge.

CORRE is a tax-exempt 501c 5 organization that represents more than 13,000 retirees of the managing contractors of DOE’s facilities in Oak Ridge. It is populated entirely by retirees and surviving spouses, run by volunteers and managed by a board of directors.

CORRE’s vision is to be an organization that improves the welfare of its members. CORRE’s mission is to protect, preserve and enhance the retirement benefits of its members and their surviving spouses. CORRE’s approach is to work with contractors, DOE, local and state officials, congressional representatives and other related organizations to secure fair, just and equitable retirement benefits for all eligible retirees.

Information about CORRE is available at www.corre.info. Retirees who have not provided their e-mail address or have changed their address recently are asked to contact Judy Kibbe at kandjkibbe@comcast.net. 🌱

From the Lab Director

Culture of science and innovation. Thomas Zacharia has been speaking to researchers around the Lab about enhancing ORNL's science and innovation culture. One focus of his talks is publications. Documenting the results of our work is a core responsibility for our scientific and technical staff. The 1963 "Weinberg Report" opens with the observation: "Transfer of information is an inseparable part of research and development." Publications (and citations) are an important metric for many of our programs. Publishing the results of our work is critically important for a number of reasons. For individual researchers, a strong publication record is a valuable asset. Michael Faraday was once asked for the secret to his success as a scientist. His reply: "The secret is comprised in three words — Work, Finish, Publish." Publications also contribute to the development of a collective body of knowledge and are essential in establishing the priority of discovery.



With that in mind, it's been encouraging to see ORNL science featured in several prominent journals recently. *Nature Materials* published research with the Spallation Neutron Source's SEQUOIA instrument. SNS researchers, working with international collaborators, excited graphene-like materials by "splashing" them with neutrons to observe spin liquid physics. Materials characterization at CNMS shows the promise of synthesizing mismatched layers to enable new families of functional two-dimensional materials, with results published in *Science Advances*. *Physical Review Letters* published research incorporating neutron scattering and computational modeling to reveal unexpected behaviors in confined water molecules. Another *Science Advances* paper, from our colleagues at BESC, describes their surprising discovery of why *Clostridium thermocellum* bacteria are particularly good at degrading biomass. Finally, *Nature* recently published a paper on neutron scattering studies of topological insulators, new materials that hold promise for quantum computing and advanced electronics. These examples illustrate just some of the capabilities of the Laboratory and underscore the value of our research to the overall scientific community.

Shull and Wollan. The University of Tennessee's decision to rename the Joint Institute for Neutron Sciences after two noted neutron scattering pioneers comes as a very welcome gesture. The Shull Wollan Center — A Joint Institute for Neutron Sciences is named in honor of Clifford Shull, who started a career in neutron sciences at ORNL that resulted in a share of the Nobel Prize for Physics, and Ernest Wollan, who recognized the Graphite Reactor's potential for scientific research and carried out the first neutron diffraction studies at ORNL as the Manhattan Project mission was completed. ORNL is proud to have these two scientists so honored at the facilities on Chestnut Ridge that represent a culmination of their vision.

Kudos. Congratulations to **Miaofang Chi** on her selection for the Microscopy Society of America's Burton Medal, which is awarded annually by the society to an early career scientist. Miaofang was also named ORNL's top scientist at November's Awards Night. Congratulations also to **Jaime Fernandez-Baca** on being named a fellow of the Neutron Scattering Society of America, and to **Sergei Shipilov**, selected as a fellow of the Canadian Institute of Mining, Metallurgy, and Petroleum. ORNL has four Office of Science Early Career Research Program award winners: **Travis Humble**, of the Computer Science and Mathematics Division, **Melanie Mayes** of the Environmental Sciences Division, **Wellington Muchero** of the Biosciences Division, and **Clayton Webster** of the Computer Science and Mathematics Division. These Office of Science awards to support the development of individual research programs are selected from a very competitive field.

Thomas Mason

Thom

Provisional name for element 117 is Tennessine

Tennessine (Ts) is the provisional name for superheavy element 117, which was discovered by a joint research team including ORNL.

The name was selected by the International Union of Pure and Applied Chemistry (IUPAC) Inorganic Chemistry Division as it published a provisional recommendation for the names and symbols of the recently discovered superheavy elements 113, 115, 117 and 118.

The Tennessine name will next undergo a statutory period for public review along with the other new names and symbols before they can receive final approval from the IUPAC Council.

Tennessine recognizes the contribution of Tennessee research centers ORNL, Vanderbilt and the University of Tennessee to superheavy element research, including the production and chemical separation of unique actinide target materials at ORNL's High Flux Isotope Reactor (HFIR) and Radiochemical Engineering Development Center (REDC). Actinide materials from ORNL have contributed to the discovery and/or confirmation of nine superheavy elements.

"These experiments and discoveries essentially open new frontiers of chemistry," said Jim Roberto, ORNL's Science and Technology Partnerships director, who played a major role in forming the collaboration with the Joint Institute for Nuclear Research (JINR) in Dubna, Russia, ORNL and Lawrence Livermore National Laboratory.

Yuri Oganessian of JINR and the scientific leader of the team noted the importance of international collaboration in discovering new elements and nuclei, completing the seventh row of the periodic table, and providing evidence for the long sought "island of stability" for superheavy elements. JINR and Livermore were previously credited with the discovery of elements 114 (flerovium) and 116 (livermorium).—Morgan McCorkle



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ORNL opens Chattanooga Office

ORNL Director Thom Mason announced May 23 during the Southeast Regional Energy Innovation Workshop in Chattanooga of plans for the Laboratory to open an office at EPB headquarters in Chattanooga's Innovation District linking local companies to ORNL resources and expertise. EPB is a municipally owned utility focused on researching the performance, security and efficiency of Chattanooga's electrical system. "This is the best way for us to build on existing ORNL collaborations in Chattanooga and to identify new opportunities," Mason said. The opening of the new ORNL office follows reciprocal visits arranged by Rep. Chuck Fleischmann for leaders in Oak Ridge and Chattanooga. "ORNL gives our region an intellectual and technical expertise any community would envy, and Chattanooga, the Gig City, is a perfect collaborator," said Fleischman. "I envision a partnership on energy, manufacturing and 3-D printing to advance economic development and technology jobs." 🌱



Deputy Secretary of Energy Elizabeth Sherwood-Randall and Rep. Chuck Fleischmann during the May 23rd ORNL Chattanooga announcement. (Photo by Billy Weeks/University of Tennessee)