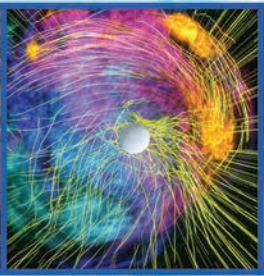
THE BREDESEN CENTER

for Interdisciplinary Research and Graduate Education

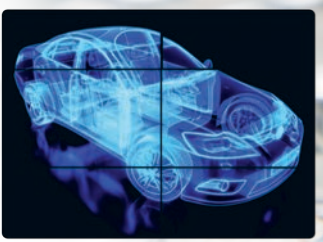



SOLVING the BIG PROBLEMS

Earn your doctorate and make a difference through the Bredesen Center for Interdisciplinary Research and Graduate Education

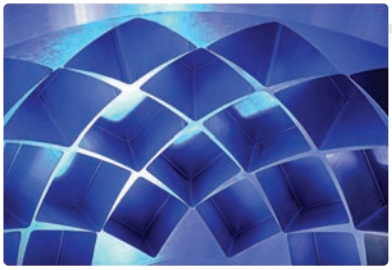
OAK RIDGE National Laboratory

THE UNIVERSITY OF TENNESSEE KNOXVILLE



Apply Today!

All application materials for the fellowship must be submitted by January 31 to allow sufficient time for evaluation. Promising students will be invited to interviews at UT and ORNL in late February.



Join Us and Change the World

Clean and affordable energy, materials for extreme conditions, environmental sustainability and climate change, nuclear nonproliferation—these are but a few of the profound challenges we face in the 21st century. You can help find solutions through a fellowship at the Bredesen Center for Interdisciplinary Research and Graduate Education. The Bredesen Center has one of the first doctoral programs in energy science and engineering, offered through the University of Tennessee and Oak Ridge National Laboratory. You'll be paired with a team of established researchers and earn your PhD while addressing the world's greatest science and technology challenges—possibly even turning your solution into a thriving business.

Top research scientists and industry leaders helped shape the program's curriculum. Your research and innovation are the key that will turn this cutting-edge curriculum into energy solutions for the future.

The center is named for Governor Phil Bredesen, who served Tennessee from 2003 to 2011, in recognition of his leadership in education and economic development for the state. In addition to the Bredesen Center, Governor Bredesen's vision for capitalizing on the great potential of the UT-ORNL partnership resulted in the UT-ORNL Governor's Chairs program, the UT Biofuels Initiative, the Volunteer State Solar Initiative, and the UT-ORNL Joint Institutes for Neutron Sciences, Computational Sciences, Biological Sciences and Advanced Materials.

Energy Science and Engineering Fellowships

Collaborate in cutting-edge research and tackle global challenges while earning your Ph.D. in Energy Science and Engineering (ESE). As an ESE doctoral fellow, you will work in some of the world's most advanced scientific facilities under the guidance of researchers who are leading the way in energy technology innovation and discovery. Choose from critical energy research challenges such as nuclear energy, bioenergy and biofuels, renewable energy, energy conversion and storage, distributed energy and grid management, energy geography, transportation sciences, as well as environmental and climate sciences related to energy usage. Additionally, training in entrepreneurship and policymaking ensures that students will develop concrete strategies to employ their discoveries in the real world.

You already understand the energy problems we face. Now it's time to develop the solutions.

Launchpad for Success

Jumpstart your entrepreneurial journey while completing your PhD, just like these three stellar examples from among the center's 80 exceptional students.

Charles Chin, a self-proclaimed gamer on the entrepreneurial track, received $1,000 in startup funding, free space in the UT Business Incubator, and legal advice as winner of the UT Vol Court pitch competition for his novel video game for K-12 students focused on real-world energy production and consumption. While his idea uses video games in a classroom setting for educational purposes, Chin has set his sights on a broader audience and hopes to create a realistic virtual environment that will engage those outside the educational gaming community.

Andrew Lepore, whose passion is carbon science, won a prestigious prize at ORNL's Next Big Idea competition. Battling 17 other researchers, including three from the Bredesen Center, Lepore convinced judges that his idea—revolutionary catalyst technology capable of converting biomass into bio-oil—was worth funding, garnering $50,000 for his research in the process. "For him to go in there against some more seasoned researchers, against students who are further along, and come out with one of the three awards speaks highly of him and of the quality of students we have here," said Bredesen Center Director Lee Riedinger.

Beth Papanek hopes to launch her startup company, Sonopore, about the time she receives her doctorate. Based on her research in bioenergy and built on technology developed at ORNL, the company will employ a process called sonoporation, which uses ultrasonic sound frequencies to create genetically mutated microorganisms, to help optimize the process of making ethanol. During her months at the center, Papanek has worked with world-leading scientists and had opportunities to present her ideas to angel investors, who are already showing interest. "I'm so connected," she said, adding that her experiences have been "amazing for career development."

Oak Ridge National Laboratory

Created in 1943 to support the United States during World War II, ORNL is now the Department of Energy's largest science and energy laboratory. Researchers from around the world use the lab's world-class scientific facilities to expand the limits of knowledge and deliver technical breakthroughs for clean energy and global security. ORNL is one of the world's most important centers for scientific supercomputing and neutron science, and its core strengths include materials research, biological and environmental research, renewable energy research, and nuclear science and engineering.

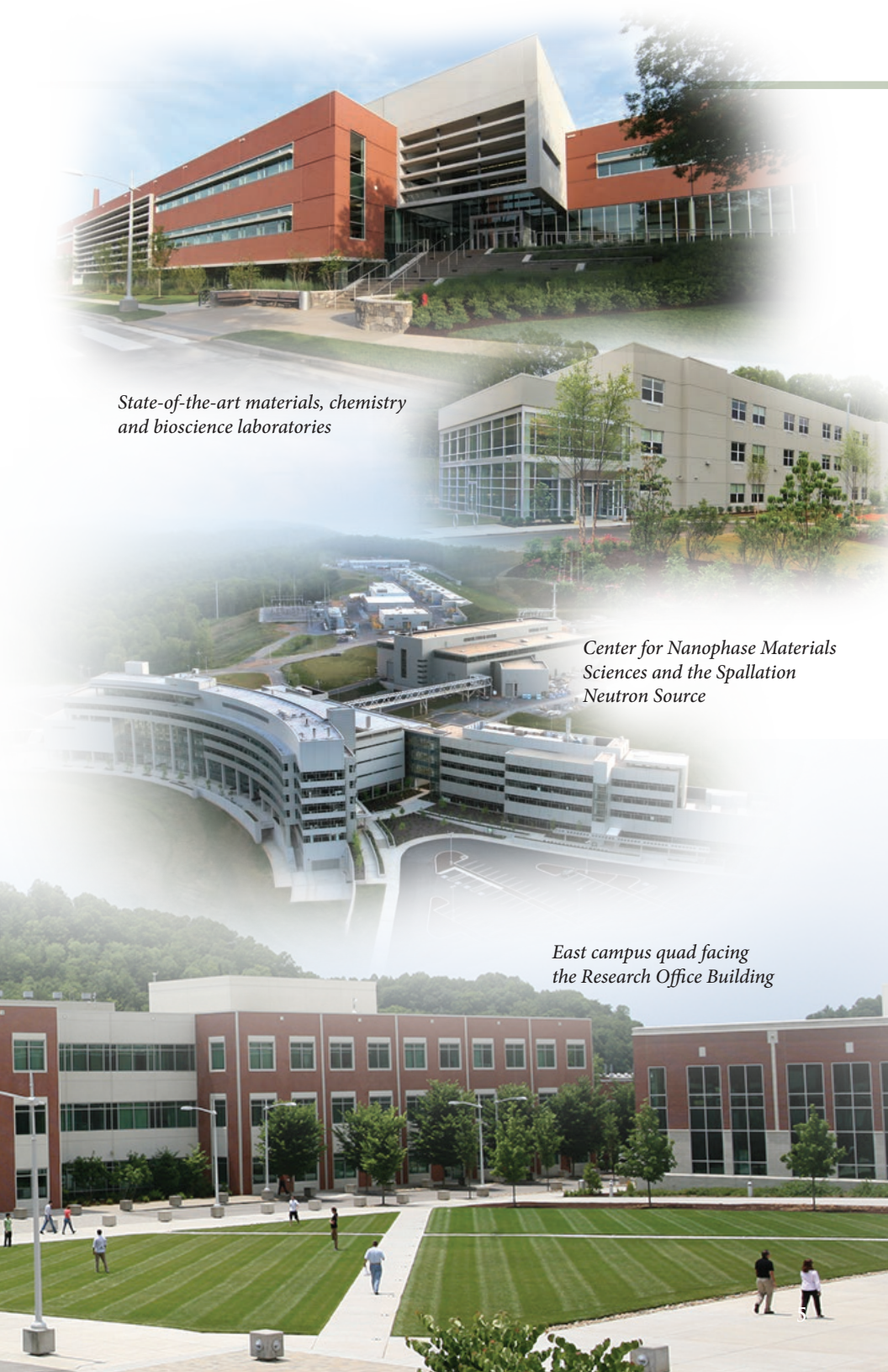
ORNL is less than 30 miles west of downtown Knoxville.

ORNL Facilities

- Titan, the United States' most powerful supercomputer
- Spallation Neutron Source, the world's most powerful pulsed source for neutron scattering
- Kraken, the world's most powerful university supercomputer
- High Flux Isotope Reactor, a world-leading source for steady-state neutron fluxes
- Gaea, the National Oceanic and Atmospheric Administration's most powerful supercomputer
- National Transportation Research Center
- BioEnergy Science Center
- Consortium for Advanced Simulation of Light Water Reactors
- Center for Nanophase Materials Sciences

ORNL Research

- Computational science & engineering
- Neutron science
- Materials science & engineering
- Energy science & technology
- Fusion science & technology, including the US ITER Project
- National security
- Climate research
- Nuclear science & engineering
- Energy storage
- Biological & environmental research
- Renewable energy



State-of-the-art materials, chemistry and bioscience laboratories

Center for Nanophase Materials Sciences and the Spallation Neutron Source

East campus quad facing the Research Office Building

University of Tennessee

UT may be over 200 years old, but it's hitting its stride in the 21st century. Immerse yourself in an unparalleled learning environment that includes an excellent research library, a technology-rich infrastructure and access to nearby ORNL. UT co-manages ORNL for the Department of Energy and operates Kraken, the world's most powerful university supercomputer. You will enjoy a safe campus community with nationally competitive athletic teams and a culturally active city. And when you get out of town you will find yourself in one of the country's most stunningly beautiful regions.

- Enrollment: 27,379:
  - 21,126 undergraduate
  - 6,253 graduate
- Faculty & staff: 9,791
- 1,400 instructional faculty
- Campus size/buildings:
  - 560 acres
  - 236 buildings
- Research (expenditures in FY13) $230 million
- Degree programs: more than 300
- Degrees awarded for 2010–11: 6,518
- UT–Knoxville alumni: 220,000
- UT system alumni: 327,000

A Few UT Facts

Mother Nature Power

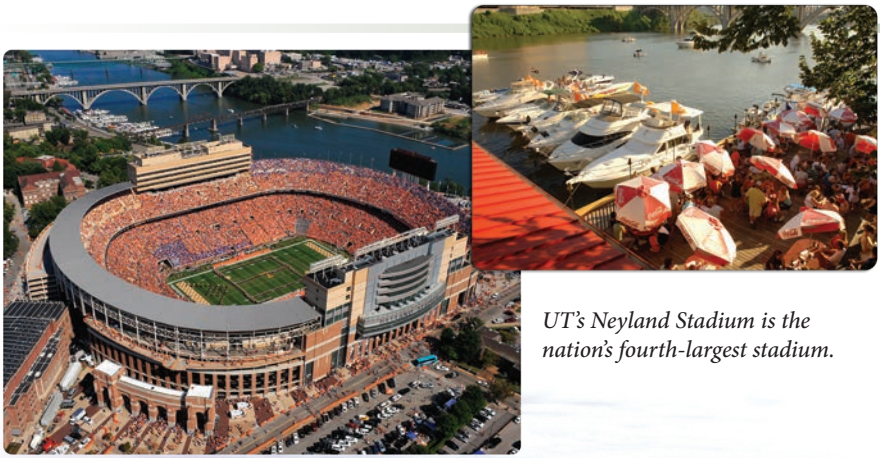
In 2007 UT Professor and Bredesen Center faculty member Barry Bruce was one of Forbes magazine's "Ten People That May Change the World." Bruce works to adapt the biological machinery in plants to produce electricity and biofuels.

Tracking Supercomputers

Professor Jack Dongarra introduced the Linpack benchmark that evaluates the performance of modern supercomputers. Dongarra also helps maintain the Top 500 List of the world's most powerful systems.

A Better Grid

The UT-led Engineering Research Center for Ultra-wide-area Resilient Electric Energy Transmission Network, announced in August 2011, will focus on the electrical grid infrastructure.



UT's Neyland Stadium is the nation's fourth-largest stadium.

The UT science and engineering campus, backed by a view of downtown Knoxville.

UT's central library and iconic Ayres Hall.

What Makes Knoxville Great?

- Fastest clean-economy job growth in the country (Brookings Institution)
- Ranked 5th among "10 Best Value Cities for 2011" (Kiplinger)
- Within an hour's drive of the Great Smoky Mountains National Park, America's most visited national park

Knoxville

The Knoxville/Oak Ridge area and its 700,000 residents reside in the Tennessee Valley between the Great Smoky and Cumberland mountain ranges. Enjoy the moderate climate as you cheer the Division I UT Vols or the Minor League Smokies baseball team. Spend an evening with the Knoxville Symphony Orchestra or check out the vibrant music scene. If you're not a spectator at heart, no problem. East Tennessee teems with great places for hiking, biking and whitewater rafting. Or maybe you'd rather go fishing or rock climbing or explore the many caves in the area.

Possibly best of all, the region is centrally located. Three-quarters of the country's population live within a day's drive.

From Knoxville

James Agee (author)
Chet Atkins (musician)
Kenny Chesney (musician)
Alex Haley (author)
Christina Hendricks (actress)
Sam Houston (statesman)
Johnny Knoxville (actor)
Cormac McCarthy (author)
Patricia Neal (actress)
Adolph Ochs (publisher)
Quentin Tarantino (director)
Dave Thomas (businessman)
Trevor Bayne (NASCAR driver)
Bill Bass (forensic anthropologist and founder of the Body Farm)
Dennis Hwang (Google logo designer)

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