

All Things ORNL!

Channa Palmer
University Recruiter



OAK RIDGE NATIONAL LABORATORY EVOLVED FROM THE MANHATTAN PROJECT



ORNL in 1943
The Clinton Pile was the world's first
continuously operated nuclear reactor

ORNL IS NOW WELL POSITIONED TO DELIVER SCIENCE AND TECHNOLOGY FOR ENERGY

- Outstanding tools for materials R&D
- World-leading systems for open scientific computing
- BioEnergy Science Center
- Growing strength in climate change impact R&D
- The nation's broadest portfolio of energy programs
- Unique resources for nuclear technology
- Robust national security programs

Our challenge:
Use these assets to
enable science and
technology
breakthroughs that
transform our
energy future



TODAY, ORNL IS DOE'S LARGEST SCIENCE AND ENERGY LABORATORY



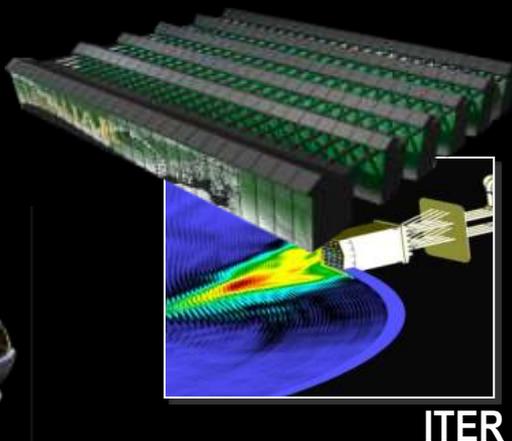
- **\$1.65B budget**
4,400 employees
- **3,000 research guests annually**
- **\$500 million invested in modernization**
- **United States' most powerful open scientific computing facility**
- **Nation's largest concentration of open source materials research**
- **Nation's most diverse energy portfolio**
- **Operating the world's most intense pulsed neutron source**
- **Managing the billion-dollar U.S. ITER project**

DELIVERING SCIENCE AND TECHNOLOGY

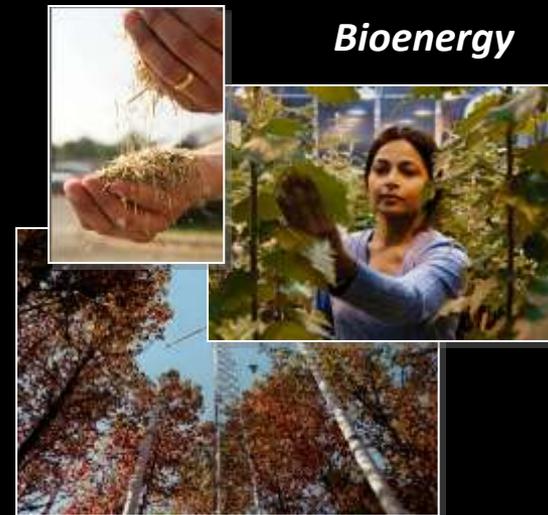
Energy Technologies



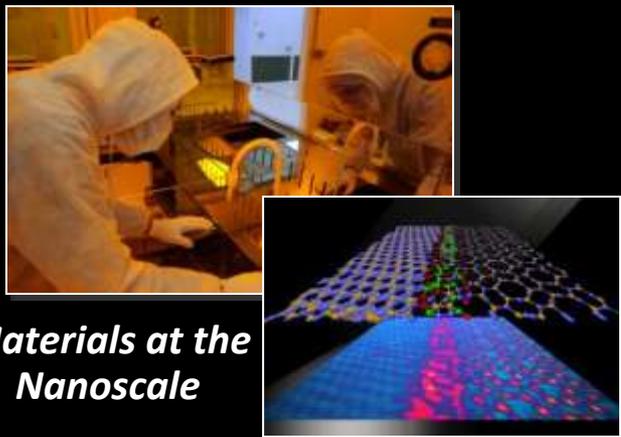
Ultrascale Computing



Bioenergy



Climate



Materials at the Nanoscale



Neutron Scattering

National Security



Nuclear Energy

DEVELOPING ULTRASCALE SCIENTIFIC COMPUTING

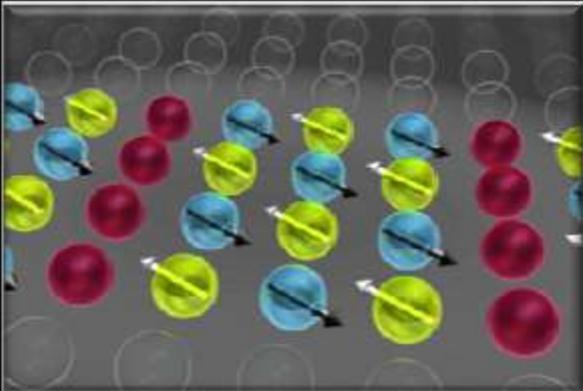
- **Leadership Computing Facility:**
 - United States' most powerful open scientific computing facility
 - Titan's Here! Exascale system running at 20 petaflops
 - Focus on computationally intensive projects of large scale and high scientific impact
- **Addressing key science and technology issues**
 - Climate
 - Fusion
 - Materials
 - Bioenergy



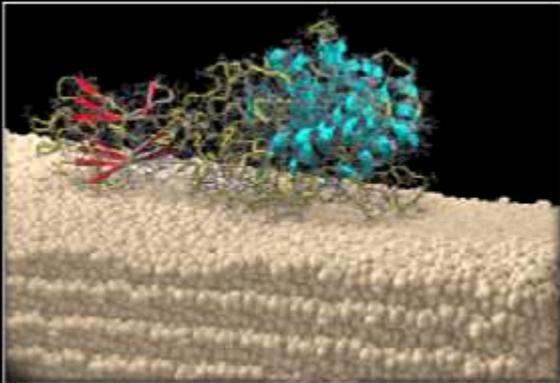
The world's most powerful system for open science

OPERATING HIGH-PERFORMANCE COMPUTERS

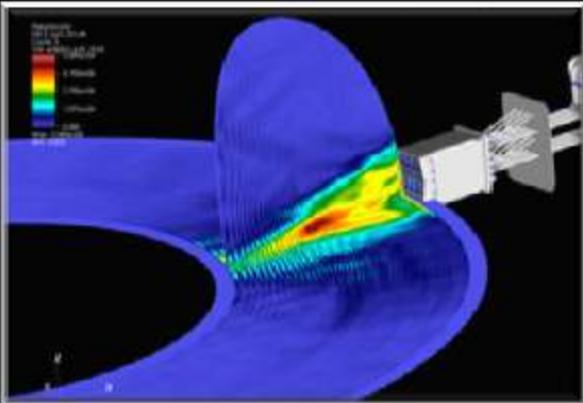
Physics of high-temperature superconducting cuprates



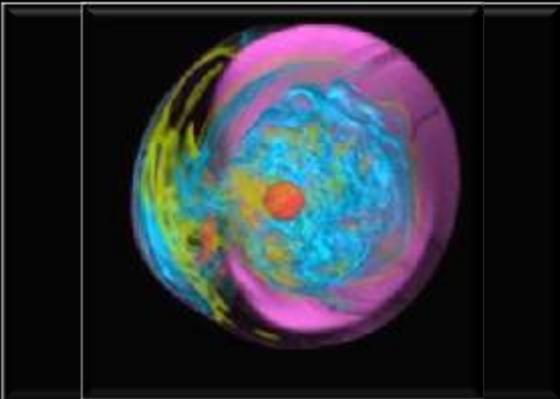
Protein structure and function for cellulose-to-ethanol conversion



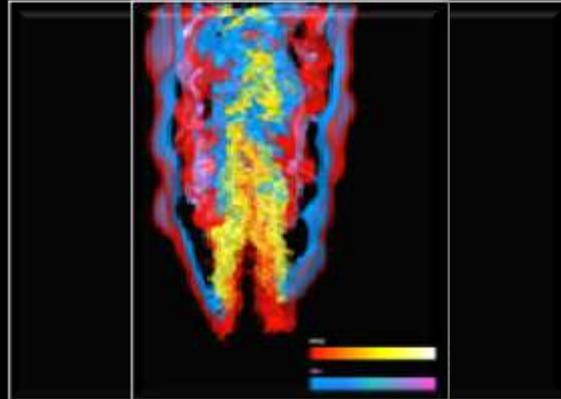
Global simulation of CO₂ dynamics



Optimization of plasma heating systems for fusion experiments



Fundamental instability of supernova shocks

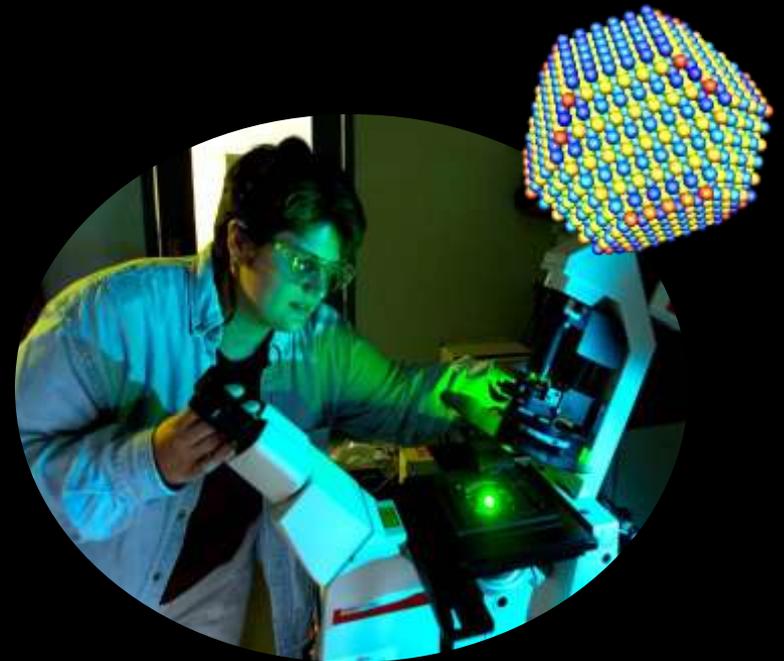


Next-generation combustion devices burning alternative fuels

UTILIZING WORLD-CLASS CAPABILITIES FOR MATERIALS R&D

- DOE's first Nanoscale Science Research Center
 - Nanofabrication
 - Nanoscale characterization
 - Materials synthesis and chemistry at the nanoscale
- World leading facilities (neutron scattering, electron microscopy, High Temperature Materials Laboratory)
- Synthesis and processing (alloys, ceramics, thin films, nanofabrication, laser and infrared processing)
- Hundreds of industrial partners; thousands of university users

Understanding materials and chemistry at the length scale where properties are determined



PUTTING THE WORLD'S BEST TOOLS FOR NEUTRONS SCATTERING TO WORK

**Spallation
Neutron Source:**
World's most
powerful
accelerator-based
neutron source

**High Flux
Isotope Reactor:**
Complementary
capabilities
and a new cold
neutron source

**UT-ORNL
Joint Institute for
Neutron Sciences:**
User gateway
for SNS and HFIR

**Delivering neutrons
to hundreds
of users**



BUILDING A VIRTUAL REACTOR TO ENABLE ADVANCES IN NUCLEAR ENERGY

CONSORTIUM FOR ADVANCED SIMULATION OF LIGHT WATER REACTORS



1

Reduce capital and operating costs per unit energy by enabling power uprates and life extension



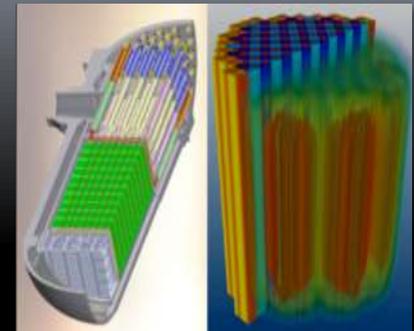
2

Reduce nuclear waste volume generated by enabling higher fuel burnups



3

Enhance nuclear safety by delivering high-fidelity predictive capability for component and system performance from beginning of life through failure



Collaborating to break the biological barriers to cellulosic ethanol

- **BioEnergy Science Center**
 - \$135M in DOE funding, plus partner contributions
 - Anchored by UT-ORNL Joint Institute for Biological Sciences
- **Tennessee Biofuels Initiative**
 - \$72M in state funding, plus industrial partner contributions
 - Includes research, facilities and equipment, pilot-scale demonstration, and agricultural price supports
- **Total investment: Close to a quarter of a billion dollars**



Developing an integrated biofuels resource:
Fundamental science through
pilot-scale demonstration

EXPLORING HOW ECOSYSTEMS RESPOND TO GLOBAL AND REGIONAL CHANGE

Plant sciences



ecosystem research



Subsurface science

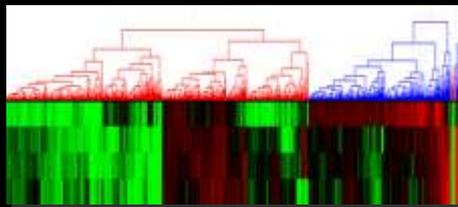


Ecological management



Detect, model, and simulate environmental responses

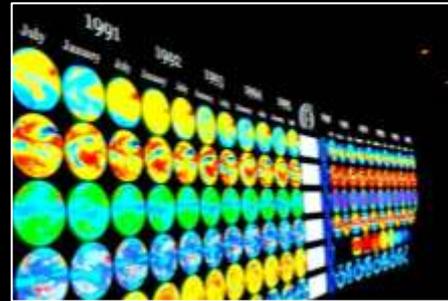
Microbial ecology and functional genomics



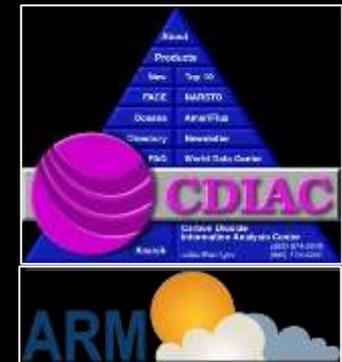
Society-technology interfaces



Global climate simulation



Environmental data systems



PARTNERING WITH INDUSTRY TO PUT OUR ENERGY INNOVATIONS TO WORK

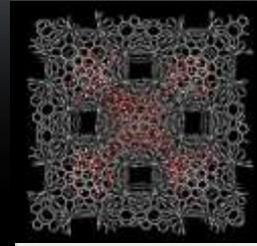
Transformational transportation technologies



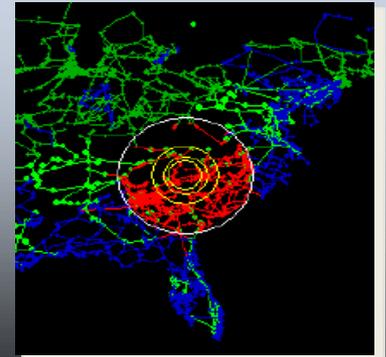
High-efficiency green buildings



Advanced materials for energy applications



Electric grid reliability and resilience



MANAGING THE U.S. ITER PROJECT FOR DOE

- Joint international R&D project aimed at demonstrating the scientific and technical feasibility of fusion power
- The United States is contributing:
 - Hardware procurement (including R&D and design)
 - Staff assignments
 - Cash and contingency
- Our work includes arranging for export of U.S.-provided hardware and for release of information important to the project

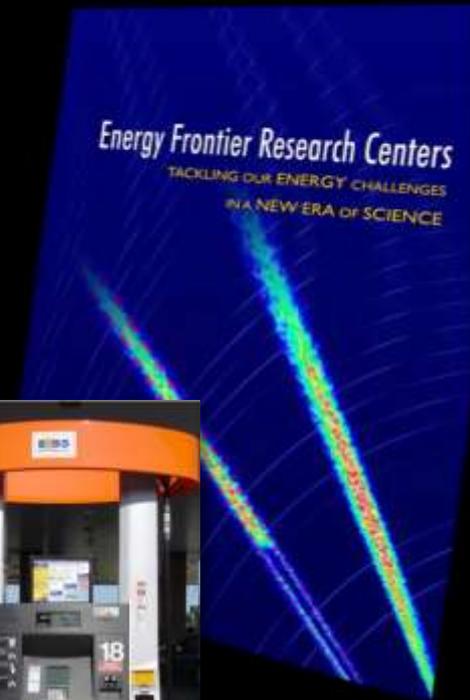


ENHANCING GLOBAL, NATIONAL, AND HOMELAND SECURITY



ORNL OFFERS:

- Collaboration
- Joint research proposals
- User facilities
- Shared students and Postdocs
- Joint faculty and research appointments
- Visiting scientists and engineers
- Cooperative research agreements
- Work for others
- Student internship research experiences



SCIENTIFIC USER FACILITIES

- Building Technologies Research and Integration Center
- Center for Nanophase Materials Sciences
- Center for Structural Molecular Biology
- High Flux Isotope Reactor
- High Temperature Materials Laboratory
- Holifield Radioactive Ion Beam Facility
- National Center for Computational Sciences
- National Transportation Research Center
- Oak Ridge Electron Linear Accelerator
- Safeguards Laboratory
- Shared Research Equipment Facility
- Spallation Neutron Source



STUDENT, POSTDOCTORAL, AND FELLOW PROGRAMS

Undergraduate	Graduate	Postdoctoral	Faculty	Fellows*
<ul style="list-style-type: none"> • DHS HS-STEM Internship • HERE@ORNL • Laboratory Technology Program • Nuclear Engineering Science Laboratory Synthesis Internship • Research Alliance in Math and Science • Science Undergraduate Laboratory Internship 	<ul style="list-style-type: none"> • Advanced Short-Term Research Opportunity • HERE@ORNL • Nuclear Engineering Science Laboratory Synthesis Internship • Research Alliance in Math and Science • Post-Master's Research Participation 	<ul style="list-style-type: none"> • Advanced Short-Term Research Opportunity • Instrument Development Fellows • Postdoctoral research associates 	<ul style="list-style-type: none"> • DHS Summer Research Team • Visiting Faculty Program • HERE@ORNL • NRC Faculty Research Participation • Sabbaticals and summer research 	<ul style="list-style-type: none"> • Eugene Wigner Fellows • Alvin M. Weinberg Fellows • Clifford Shull Fellows: Neutron science • Alston Householder Fellows: Scientific computing

<http://jobs.ornl.gov>

WANT TO CONTINUE YOUR EDUCATION?

CONSIDER JOINING THE BREDESEN CENTER

**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

UNIVERSITY of
TENNESSEE

UTK-ORNL Distinguished Graduate Fellowship

Heavily involved in research at **ORNL** while simultaneously taking specialty courses and seminars at the **University of Tennessee**.

Energy Science and Engineering

Involved in studies of STEM fields as well as interdisciplinary entrepreneurship and public policy.

**Tuition Covered with
\$28k-\$30k Stipend!**

FULL-TIME POSITIONS PLUS BENEFITS

40+ full-time positions open

- Science Organizations
- Support Organizations

Competitive Pay

Full Medical/ Dental Benefits

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11 Paid Holidays

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ORNL Career News

@ORNL_Careers

Oak Ridge National Lab Career Info and News
Oak Ridge/Greater East TN, USA <http://jobs.ornl.gov>

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#ORNL was mentioned in @CNNMoney's article about the 10 fastest growing US cities. #Knoxville is #8! cnmmon.ie/HjscUe
↳ In reply to CNNMoney.com
-  **ORNL Career News** @ORNL_Careers 1h
#Ilovelyjob bc I get to dig in the dirt to answer important questions about future climate change! - C. Iversen, Energy & Envir. Sci.
-  **ORNL Career News** @ORNL_Careers 2 Apr
Cool picture. We have quite a few of those roaming around our campus! RT @BirdPic Some wild turkeys bit.ly/HLvEZ0
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@Rickie_Statiros Good morning to you! Thanks for the follow.
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#Ilovelyjob because I constantly use novel ideas to meet ever-changing engineering problems. -S. Holland, Safeguards Intern
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@xlunclu @CMKHSL Thanks for following us!
-  **ORNL Career News** @ORNL_Careers 30 Mar
Recruiters are at the 2012 NSBE Conference in Pittsburgh, TODAY from 12-5pm! Make sure to stop by the booth!
pic.twitter.com/CqwthHG4
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Oak Ridge, Tennessee, USA <http://www.ornl.gov>

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ORNL Story Tip: Electricity - Grid game changer #energy #grid
#efficiency 1.usa.gov/HRNYy6
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ORNL Story Tip: Microscopy - Transfer stage solution #microscopy
1.usa.gov/HRNQyD
-  **OakRidgeLabNews** @OakRidgeLabNews 3 Apr
ORNL Story Tip: Biology - When neutrons and simulation unite
#proteins #hpc #computing #neutrons #simulation 1.usa.gov/HRNMIq
-  **OakRidgeLabNews** @OakRidgeLabNews 3 Apr
ORNL Story Tip: Physics - Searching for 'supersolidity' #physics
#neutrosn #SNS #helium 1.usa.gov/wWO4nU
-  **OakRidgeLabNews** @OakRidgeLabNews 3 Apr
Chemistry - Workshop helps student earn publication #STEM
#chemistry #neutrons #SNS 1.usa.gov/A2NfaJ
-  **OakRidgeLabNews** @OakRidgeLabNews 3 Apr
ORNL Story Tip: Biology - Model tells the story #milk #neutrons
#HFIR #protein #nutrition 1.usa.gov/AqQXqr



Oak Ridge National Labora... Timeline Now Highlights



Oak Ridge National Laboratory

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Government Organization
Real Science. Real Life.



3,685



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What's on your mind?



Oak Ridge National Laboratory shared a link.
about an hour ago

Local officials and volunteers celebrated the construction of the Energy Star-certified, 1,000-square-foot home built by Aid to Distressed Families of Appalachian Counties, and volunteers from Oak Ridge National Lab, during a ribbon-cutting ceremony Thursday.

Recommendations

See All



Ryan Johnson

Tracey Wellington, a GEM Fellow sponsored by the Oak Rid...
about 2 months ago



Dan Blazeviski

Some very nice pics of Oak Ridge from the it's early days: h...
about 2 months ago



Mary Atkins

A must have for engineers, designers, drafters, & machinist...
about 4 months ago



Yvonne Socha

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CONTACT INFORMATION



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QUESTIONS?

