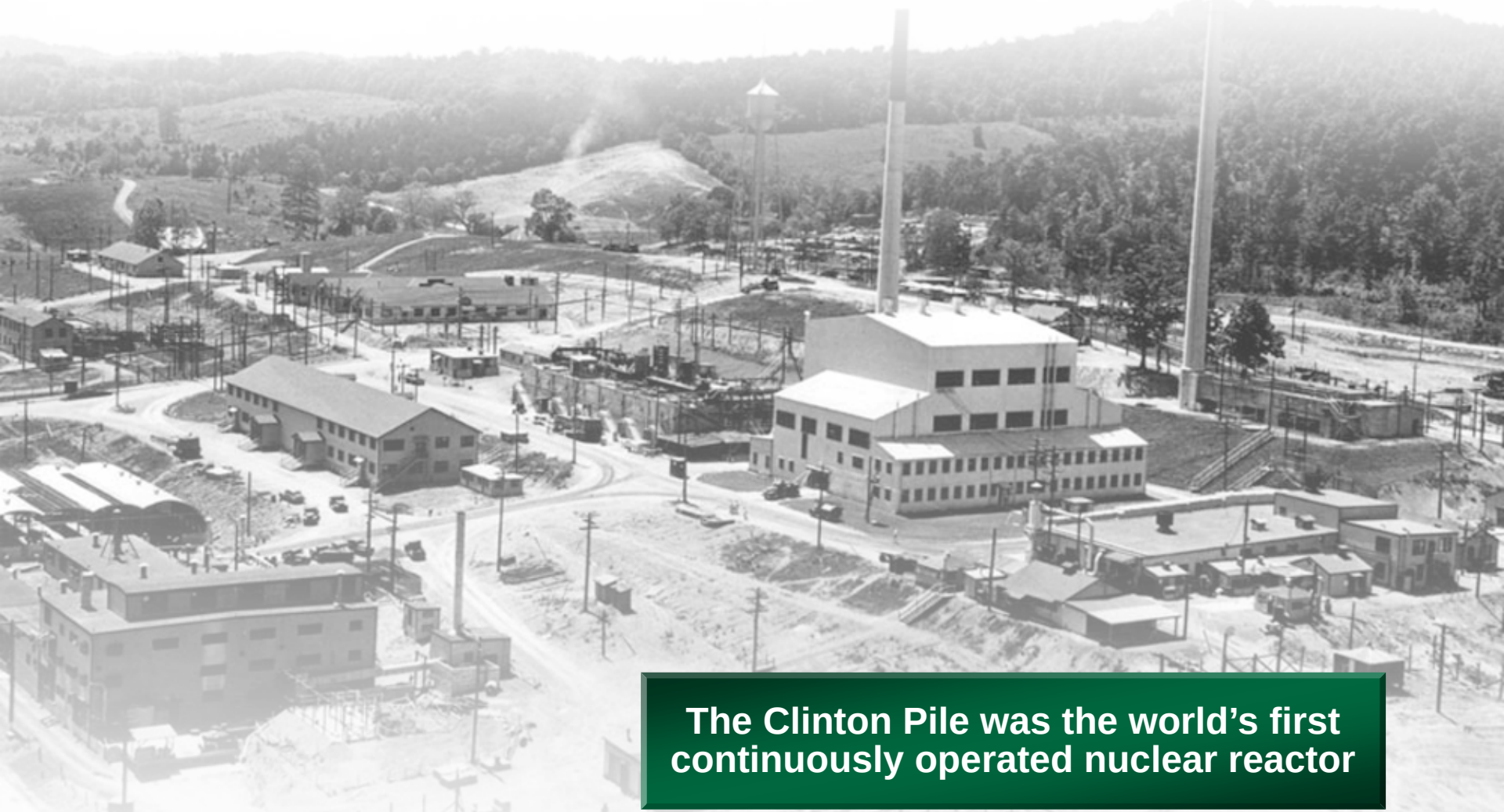
Oak Ridge National Laboratory Overview

Shelly Hunt
College Recruitment Programs
Oak Ridge National Laboratory

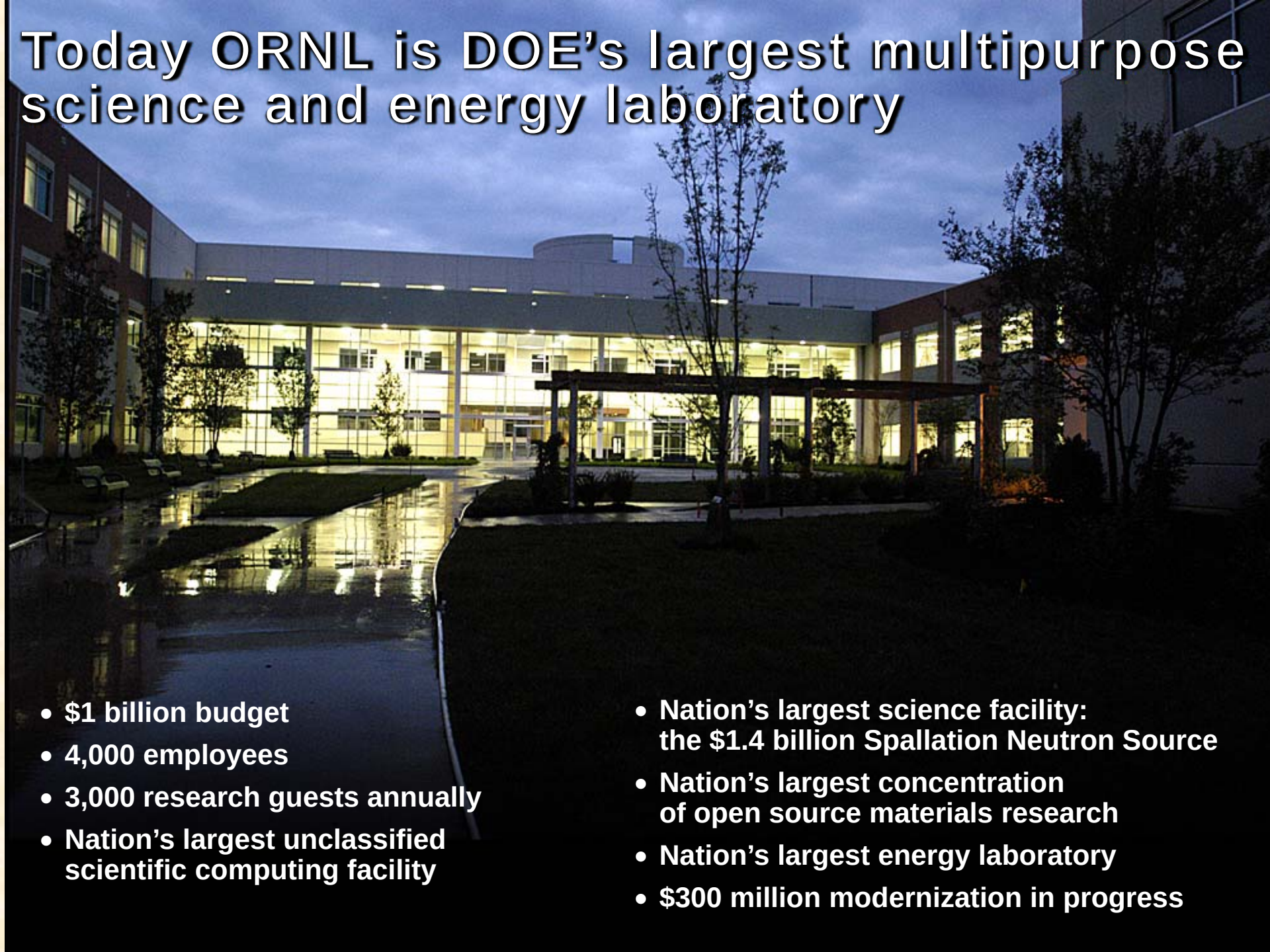
Industrial Assessment Centers
IAC Student Meeting – Washington, D.C.
February 6-8, 2008

Oak Ridge National Laboratory evolved from the Manhattan Project



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

Today ORNL is DOE's largest multipurpose science and energy laboratory



- $1 billion budget
- 4,000 employees
- 3,000 research guests annually
- Nation's largest unclassified scientific computing facility

- Nation's largest science facility: the $1.4 billion Spallation Neutron Source
- Nation's largest concentration of open source materials research
- Nation's largest energy laboratory
- $300 million modernization in progress

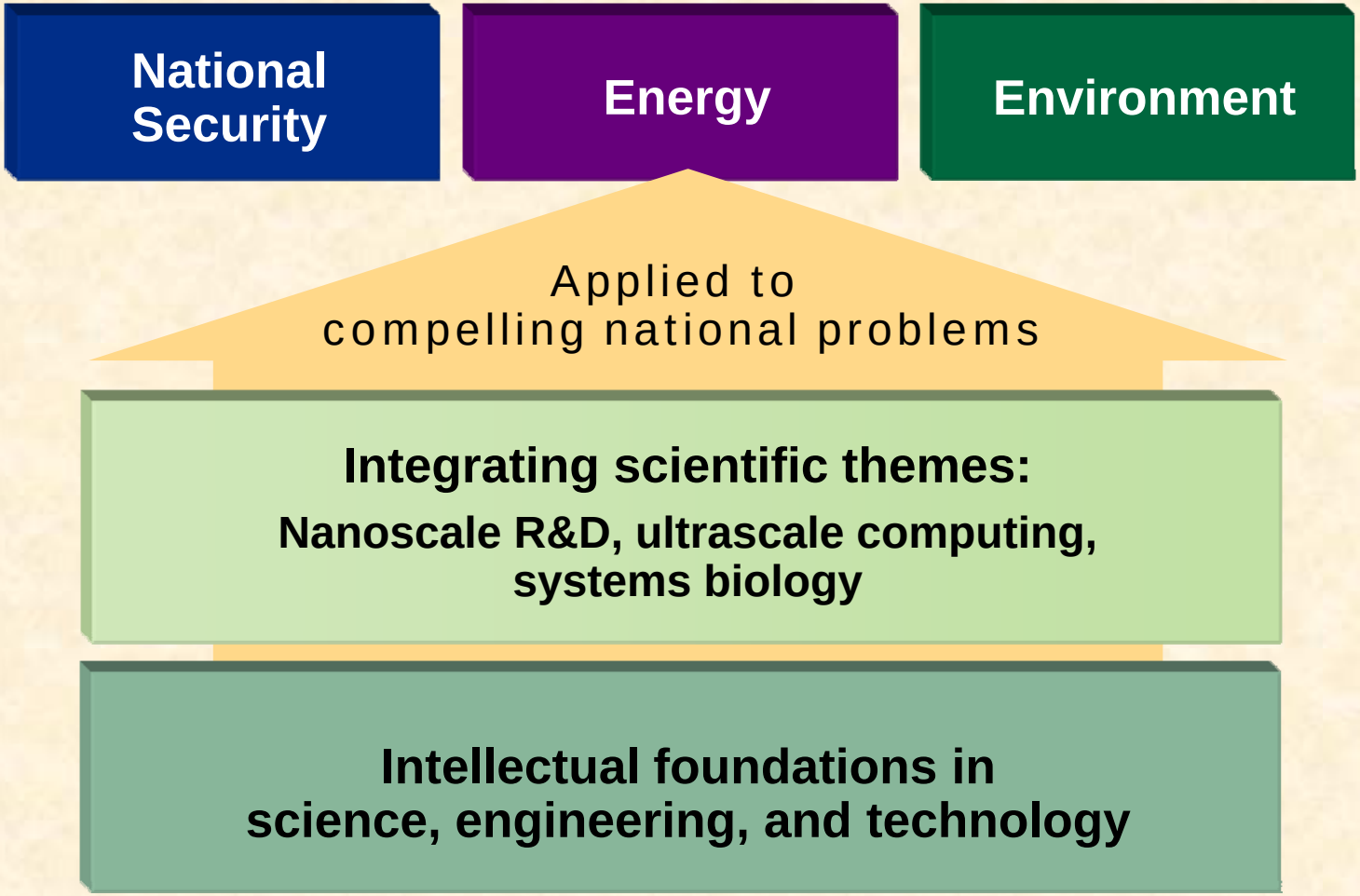
ORNL is managed and operated by UT-Battelle

UT-BATTELLE
Limited Liability Company

The University of Tennessee
Knoxville, Tennessee

Battelle
Columbus, Ohio

Oak Ridge National Laboratory's research framework



ORNL has six primary missions

- **Delivering and sustaining the world's foremost center for neutron scattering**
- **Leadership in computational science and engineering at scale**
- **Leadership in materials science through discovery, synthesis, and characterization of materials at the nanoscale**
- **Leadership in microbial biology and proteomics, producing bio-based solutions to energy challenges and enabling the new field of "ecogenomics"**
- **Leadership in energy technology through science**
- **Applying our S&T base to deliver "first-of-a-kind" security technologies and implement arms control and nonproliferation programs**

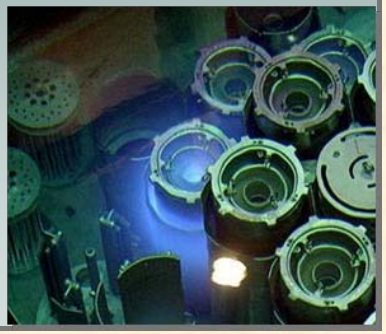
We are developing and deploying world-class tools for nanoscale R&D

Spallation Neutron Source

- High-intensity neutrons for materials research at the nanoscale
- 1.4 MW of beam power on target
- 16 instruments

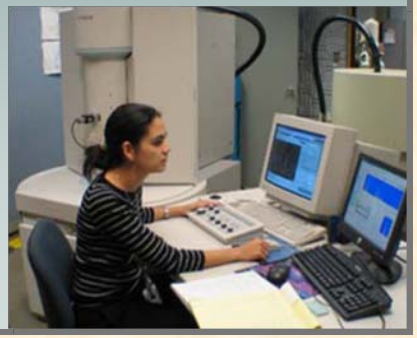
High Flux Isotope Reactor

- The nation's most powerful research reactor
- World-class cold source and instruments for neutron scattering



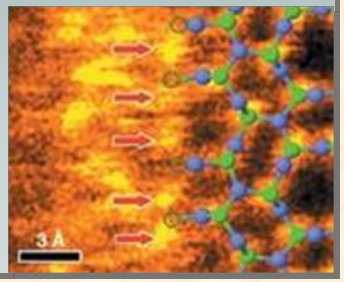
Center for Nanophase Materials Sciences

- $65M facility began operation in October 2005
- User program launched with 75 projects



Ultrahigh-resolution microscopy

- Advanced Microscopy Laboratory
- Aberration-corrected electron microscopes
- World-record resolution: 0.6 Å



The Spallation Neutron Source

Total cost: $1.4 billion

- **World's most powerful pulsed neutron source**
- **Nation's largest civilian science project**
- **Complemented by world-class, steady-state neutron scattering capabilities at the High Flux Isotope Reactor**
- **1500-2000 scientific users annually**

First neutrons produced April 28, 2006

ORNL's Center for Nanophase Materials Sciences is DOE's first nanoscience center

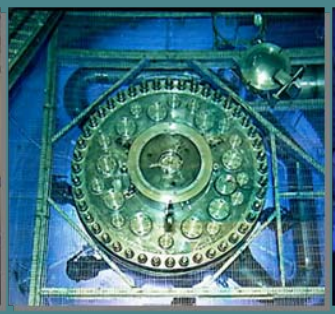
- **A $65M multidisciplinary center for nanoscale materials research**
- **Leverages unique neutron scattering capabilities of SNS and HFIR**
- **80,000 sq. ft. of laboratory/office space with clean rooms and nanoscience research equipment**
- **Unique facilities for nanofabrication, nanoscale characterization, and materials synthesis**
- **Broadly accessible to universities and industry**
- **User operation began in October 2005**

The CNMS is located next to the Spallation Neutron Source

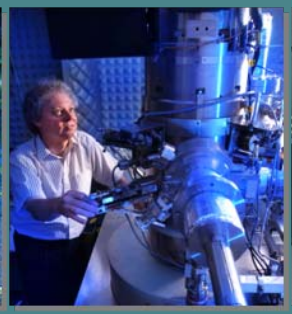
Advanced materials science and engineering

DOE's largest materials and condensed matter programs	Special strengths in advanced alloys and ceramics, correlated electron materials, macromolecular systems, and carbon-based materials
SNS and HFIR offer transforming capabilities	Structure and dynamics, large-scale structures, spins, neutron and neutrino physics
World-class capabilities for nanoscale science	Synthesis, nanoscale characterization, spin-sensitive and other probe spectroscopies
Leadership-class computing	Predictive simulation of materials and molecular interactions
Unmatched characterization capabilities	Electron microscopy, mass spectrometry, local electron probes, physical and chemical properties measurement

DOE's first nanoscience center



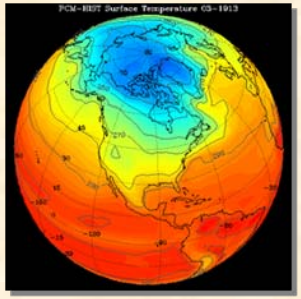
World's foremost capabilities for neutron science

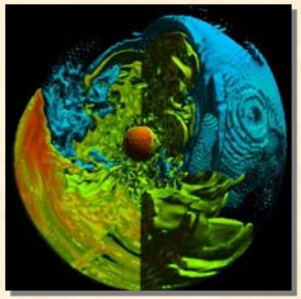


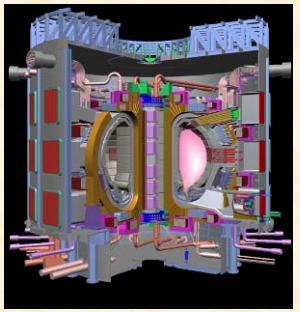
Record-setting electron microscopes

Leadership-class computing

ORNL will lead the Nation in high-performance scientific computing







- **Leading the partnership to develop the National Leadership Computing Facility**
  - **Leadership-class scientific computing capability**
  - **100 teraflops by 2006; 250 teraflops by 2007; 1 petaflop by 2008**
- **Attacking key computational challenges**
  - **Climate change**
  - **Nuclear astrophysics**
  - **Fusion**
  - **Materials sciences**
  - **Biology**

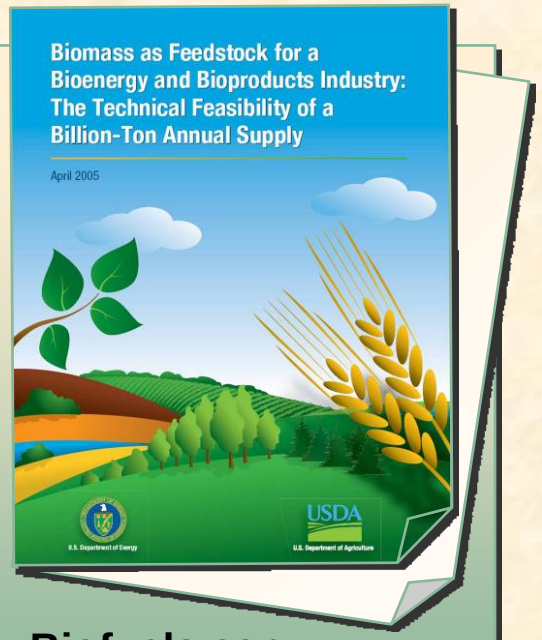
- **Providing access to our computational resources through high-speed networking**

Our systems biology research extends from the molecule to the ecosystem

Our work in genetics, biotechnology, process chemistry, and engineering supports bioenergy development

Clostridium thermocellum **breaks down cell walls to enable ethanol production from cellulose**

Sequencing of poplar genome will lead to trees that produce more biomass for conversion into fuel

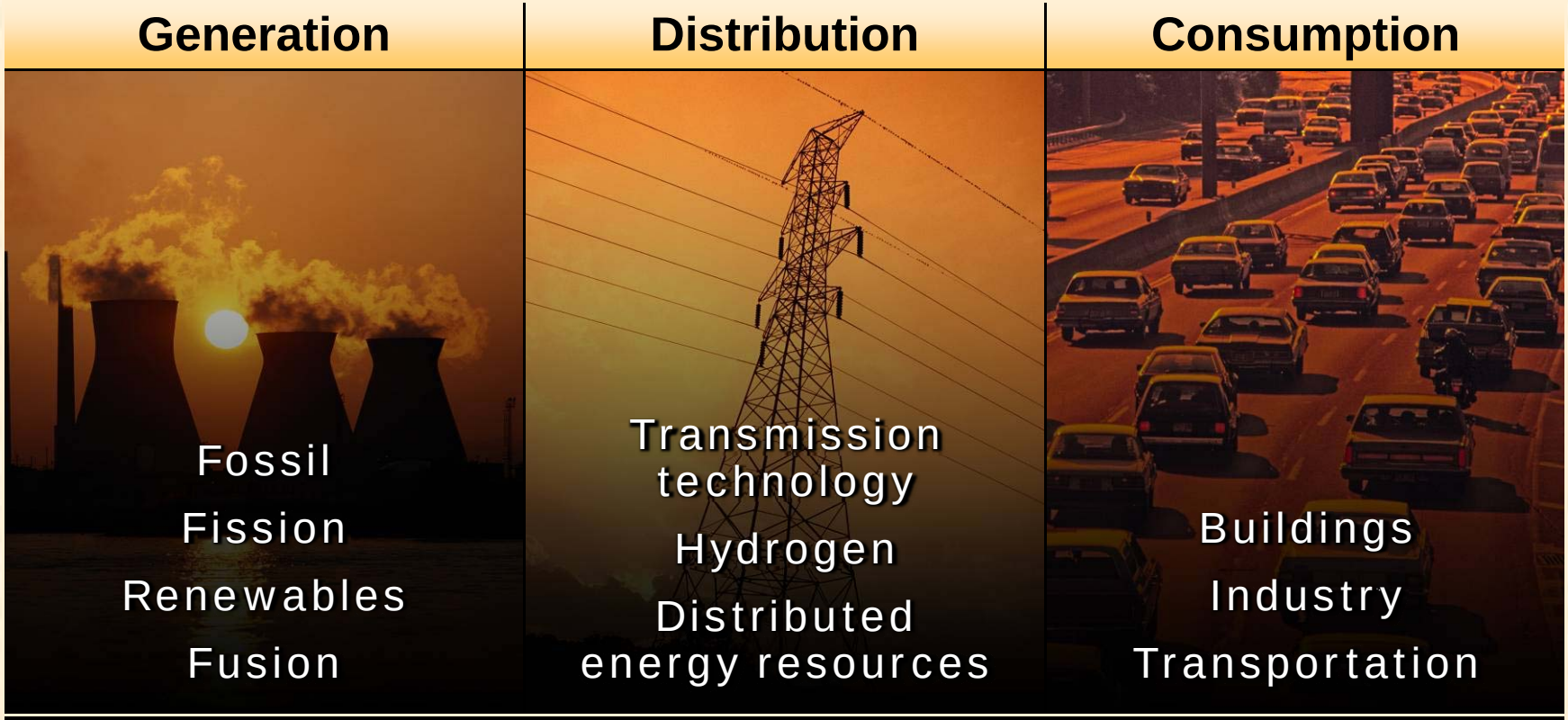


Biofuels can displace 30% of imported oil

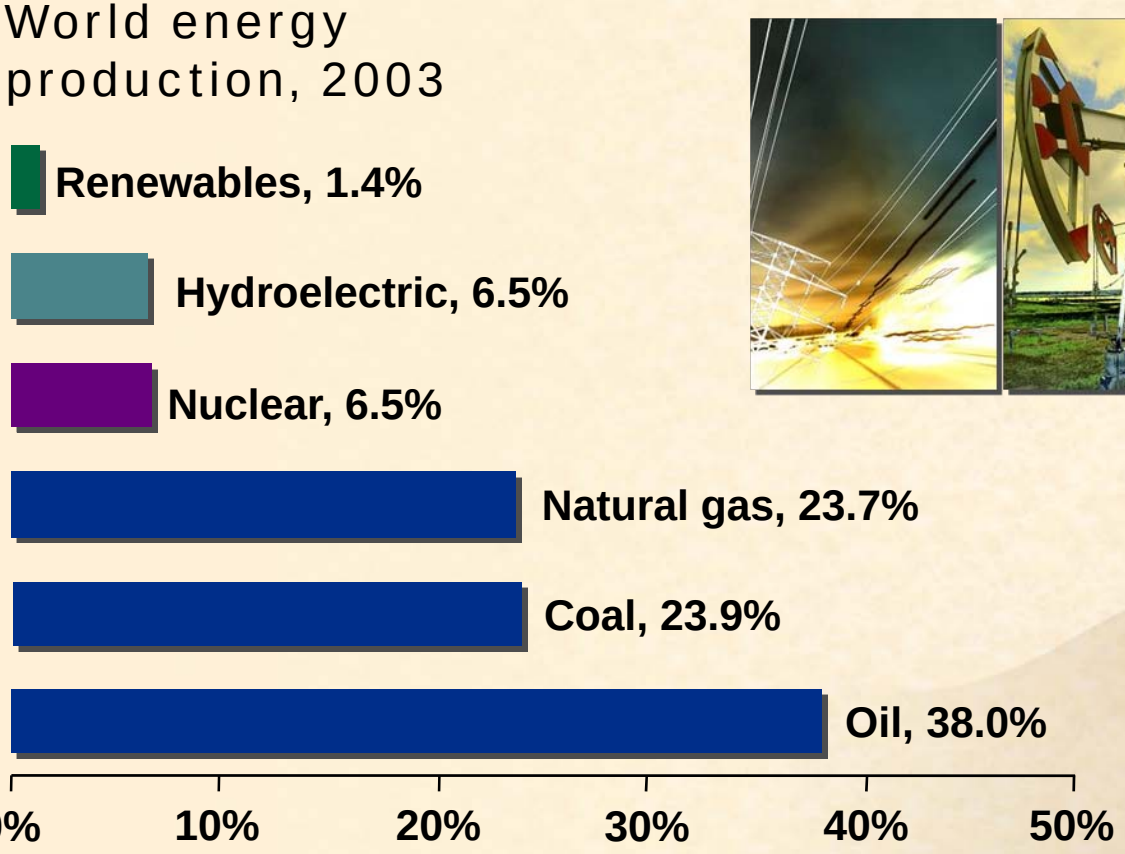
We apply our S&T resources to national and homeland security

- **Detecting, preventing, and reversing the proliferation of weapons of mass destruction**
- **Deploying integrated systems for incident awareness, detection, and response**
- **Providing technology for detecting explosives at the part-per-trillion level**
- **Delivering enhanced protection and new capabilities to first responders and the military**

We address the energy challenges of the present . . . and the future

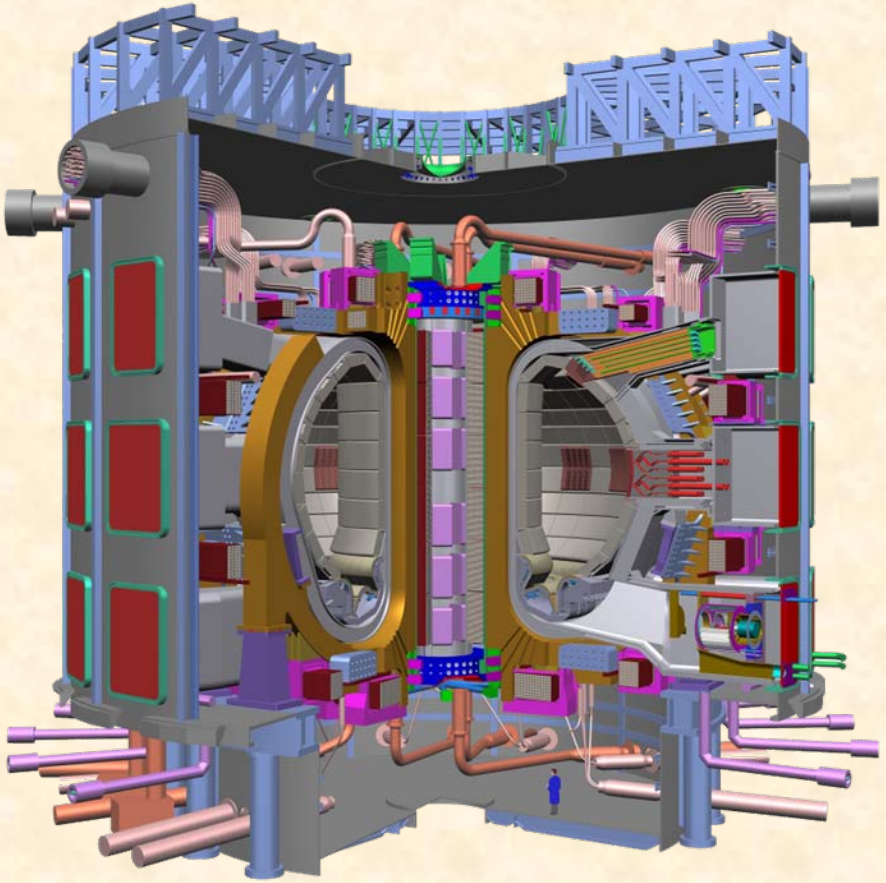


Meeting world energy demands: No silver bullet and no free lunch



ORNL has the lead in managing the U.S. contribution to ITER

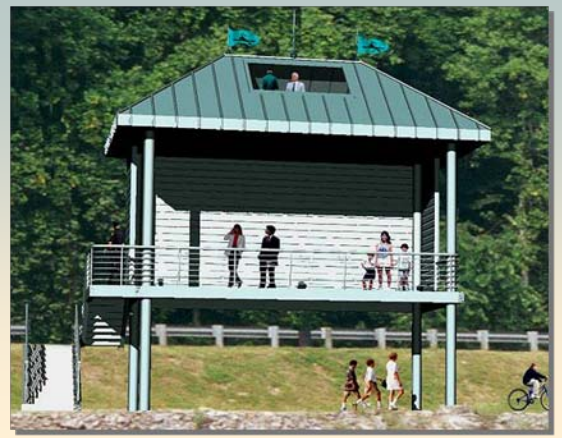
- **7-nation collaboration formed**
- **Site selected: Cadarache, France**
- **Project moving toward construction**
  - **Total cost: $11B ($6B for construction)**
  - **U.S. project activity capped at $1.122B ($19.3M in FY06, $60M in FY07)**
- **US ITER Project management moved to ORNL in February 2006**



We are investing in the community

- Oak Ridge High School revitalization
- $2.5M for science education
- 27 new science labs
- UT workshops for science teachers

- 61 volunteer projects
- 2,700 employees participating
- 14,500 volunteer hours
- $800K United Way contribution



- $6M in legacy investments
- More than $10M/year in state and local taxes
- Leadership in civic organizations

We are committed to strong university partnerships

ORAU
Duke University
Battelle
NC State University
Florida State University
Georgia Tech
University of Virginia
Virginia Tech
Vanderbilt

Oak Ridge Center for Advanced Studies

- 21st century think tank
- Focused on complex interdisciplinary problems

Collaborative research

- More than 100 universities

Joint hiring

- Governor's Chairs
- 45 joint faculty with 6 universities

Joint institutes

- Heavy ion research
- Neutron sciences
- Biological sciences
- Computational sciences
- Materials sciences

User facilities

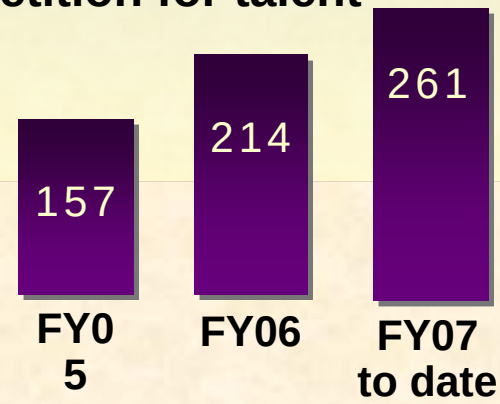
- 18 at ORNL
- Thousands of university users

ORISE: Student and Postgraduate Programs

- **ORNL partners with the Oak Ridge Institute for Science Education (ORISE) to provide educational and research opportunities to students and postgraduates**
- **ORNL and ORISE bring in over 300 students to the Lab each summer through various internship programs**
- **There are over 200 postgraduates currently working on different research projects throughout the Lab**
- **For more information on student and postgraduate programs at ORNL or to apply, please visit (http://www.orau.gov/orise/edu/ornl/postneeds.htm)**

We have stepped up efforts to acquire and develop additional people

- **We will hire 400 people this year — but we are also seeing an increase in turnover**
- **We have open positions for 2 Leadership Team posts and 7 Governor's Chairs**
- **We expect increasing competition for talent**



Employees leaving payroll

- **Recruiting**
- **Training and development**
- **Mentoring**
- **Succession planning**
- **Employee engagement**

iCIMS Hiring made easy.

CLIFFORD G. SHULL Fellowship Program

Wigner Fellowship Program Oak Ridge National Laboratory

Oak Ridge National Laboratory:
Changing the World One Career at a Time