



# Savannah River National Laboratory Overview

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**Dr. Samit K. Bhattacharyya**  
Laboratory Director  
January 26, 2010



**SRS CAB Meeting**

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# Organizational Construct

Management and operating contractor:  
Savannah River Nuclear Solutions, LLC

Garry W. Flowers  
President & Chief Exec. Officer



Marvin R. Eshelman  
Executive VP & COO



Dr. Samit K. Bhattacharyya  
SRNL Laboratory Director



Fred Dohse  
VP Nuclear Materials Operations



Chris Gentile  
VP NNSA Programs



Rich Slocum  
VP Recovery Act Portfolio



SRNL – Savannah River National Laboratory; NNSA – National Nuclear Security Administration; MOX – Mixed Oxide Fuel



Savannah River National Laboratory  
Operated by SRNS  
(A Area)



University of Georgia  
Savannah River Ecology Laboratory  
(A Area)



WSI Security (B Area)

U.S. Forest Service-SR  
Forest & timber  
management (G Area)



Shaw AREVA MOX Services  
MOX Fabrication Facility (F Area)



Parsons  
Salt Waste Processing  
Facility (J Area)



Savannah River Remediation  
Liquid waste operations (H, F, S,  
Z areas)



# DOE National Laboratories

**Savannah River National Laboratory**

**Sandia National Laboratory**

**Pacific Northwest National Laboratory**

**Oak Ridge National Laboratory**

**National Renewable Energy Laboratory**

**National Energy Technology Laboratory**

**Los Alamos National Laboratory**

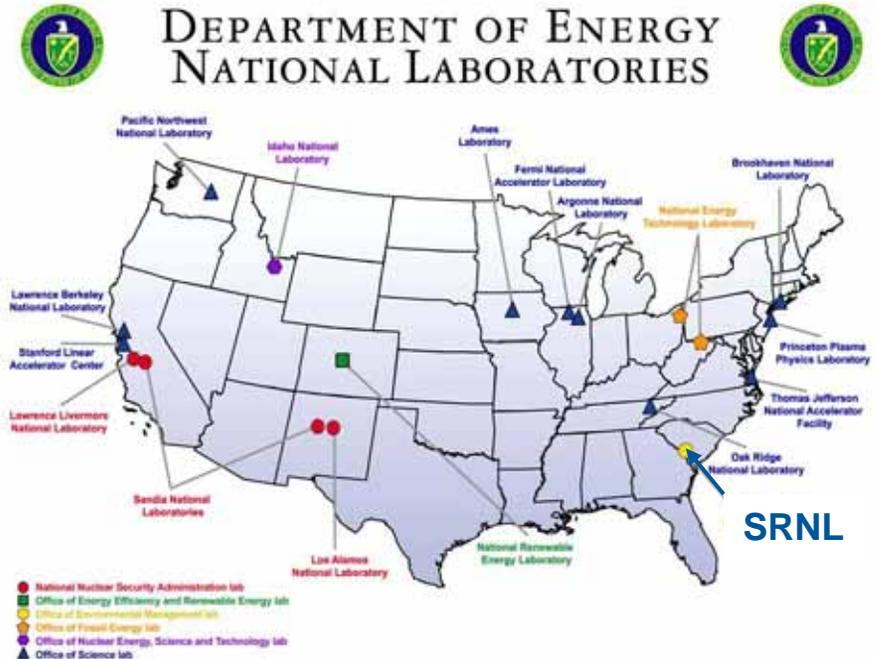
**Lawrence Livermore National Laboratory**

**Lawrence Berkeley National Laboratory**

**Idaho National Laboratory**

**Brookhaven National Laboratory**

**Argonne National Laboratory**



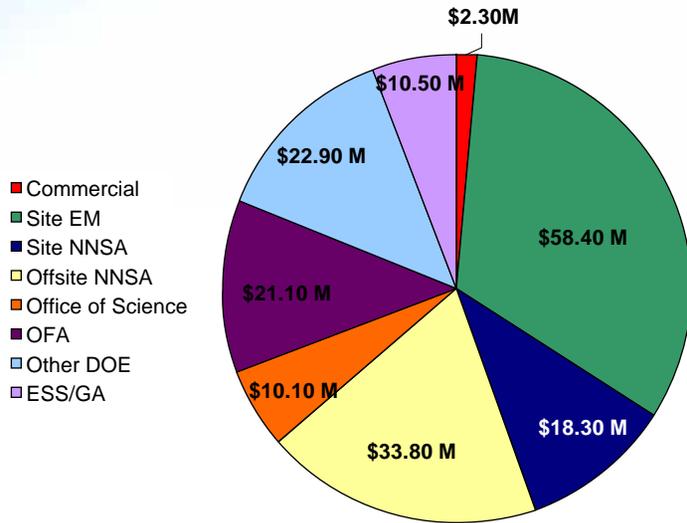
**Newest National Laboratory**

**Environmental Management  
(EM) Corporate Laboratory**



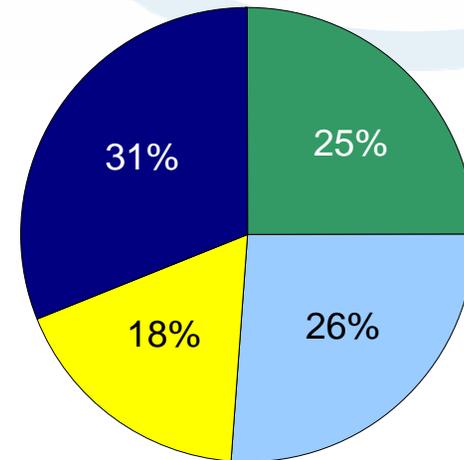
# SRNL Resources

## Research & Development (R&D) Funding



## Research & Development (R&D) Population

- PhD
- BS/BA
- MS/MA
- Support



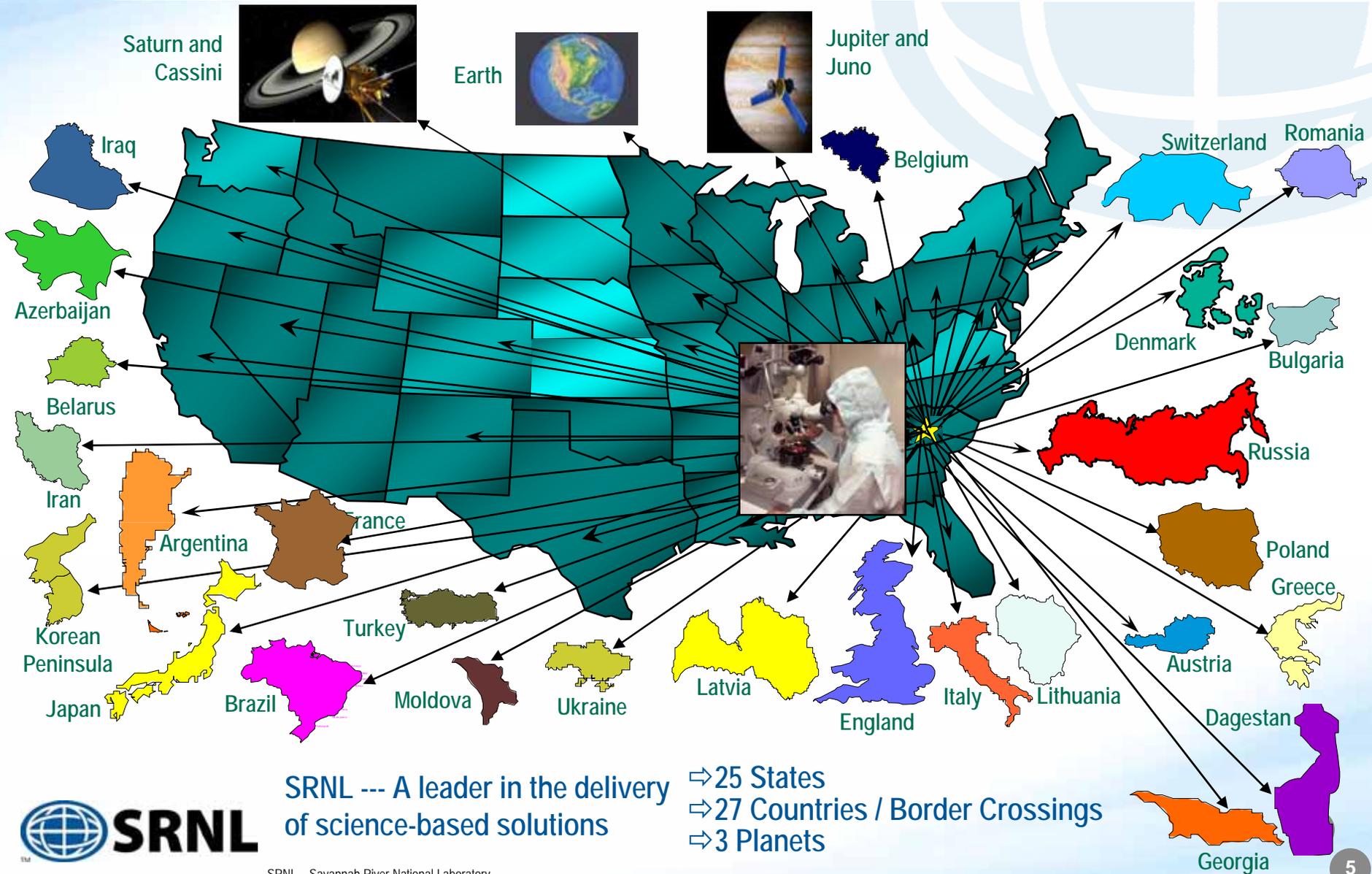
**\$177.45M Annual Business in FY09**  
**46% of Funding by Offsite Sources**

**Driving to \$300M to obtain stand-alone sustainable level of funding**

**Increasingly Diverse Customer Base**

**751 Research Staff**  
**193 Operations Staff**  
**944 Total Staff**

# SRNL: Where We Work...



SRNL --- A leader in the delivery of science-based solutions

- ⇒ 25 States
- ⇒ 27 Countries / Border Crossings
- ⇒ 3 Planets



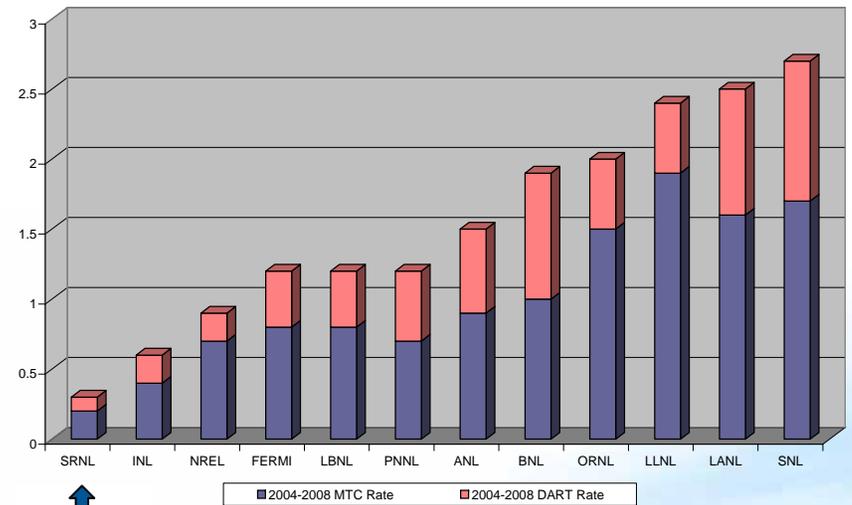
SRNL - Savannah River National Laboratory

# SRNL Features

- **Safety Excellence**
  - Leadership in Research Safety
  - Safest DOE National Laboratory 2004 through 2008
- **Diverse Core Competencies in Science and Engineering**
- **Nation's Premier Applied Science/Technology Laboratory**
  - Applications to practical problems
- **EM-based Technologies and Skills Applied to Other Areas**
- **Cost Effective**
  - Lowest cost in National Lab system



**National Laboratory Injury & Illness Data**  
Per 200,000 Hours Worked, CYs 04, 05, 06, 07, & 08  
Note: Data obtained from DOE Computerized Accident/Incident Reporting System (CAIRS)



↑  
**SRNL**



# Facilities for All Types of Materials

Intermediate-Level Cells



Gloveboxes



Shielded Cells



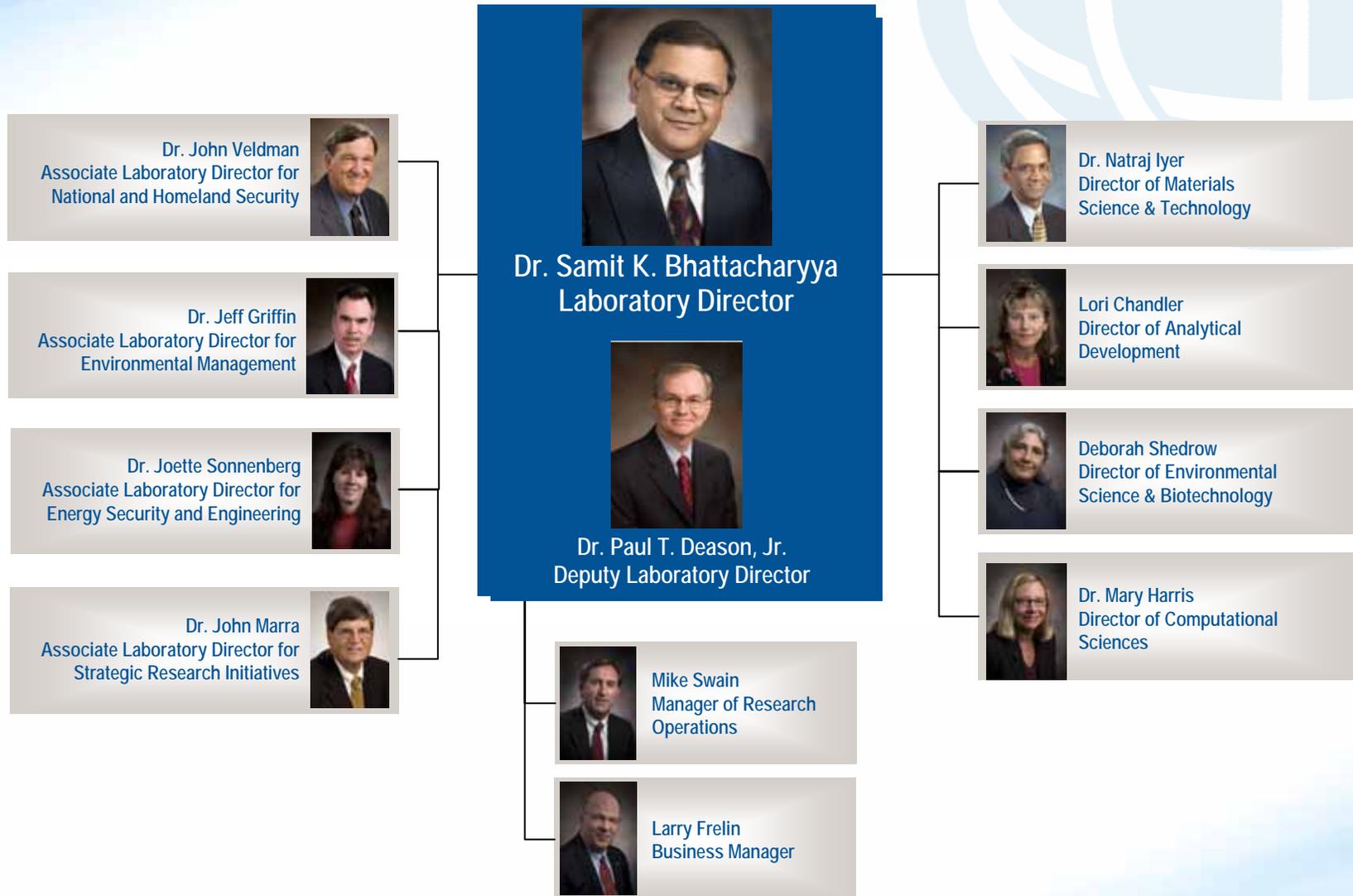
Radiological Hoods

Nonradioactive Biotechnology Labs



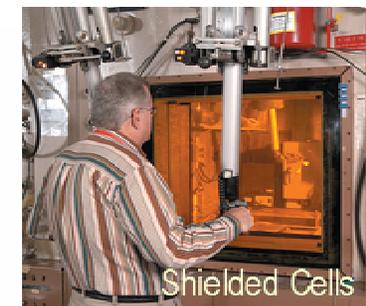
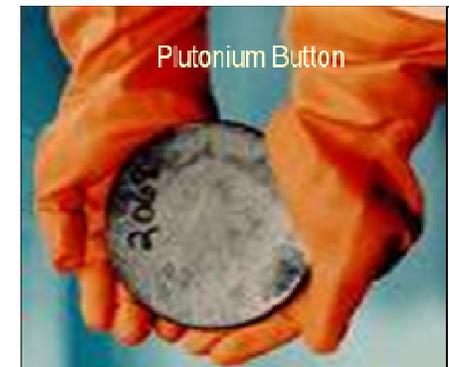
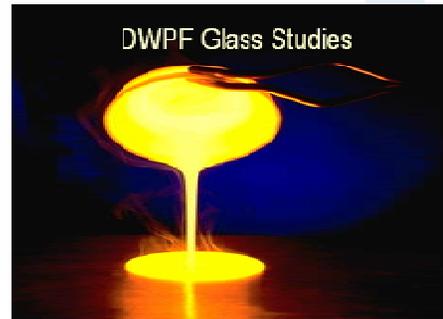
Nonradioactive Laboratories

# SRNL Organization



# Broad Science and Engineering Proficiencies

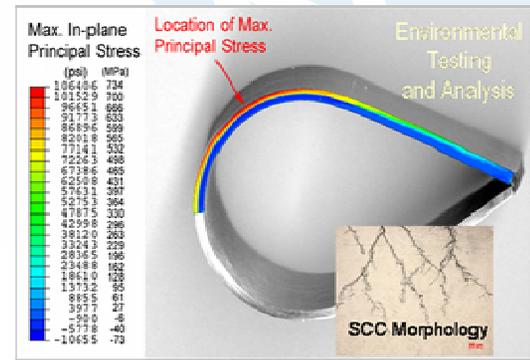
- **Integrated chemical process development**
  - Laboratory, bench, and pilot scale
  - Strong analytical chemistry capability
- **Materials development and analysis**
  - Metallurgy, ceramics, and corrosion analysis
  - Glass and grout formulation and development
- **Process and engineering modeling**
- **Radioactive process development and plant support**
- **Nuclear engineering**
- **Mechanical engineering, remote systems, and robotics**



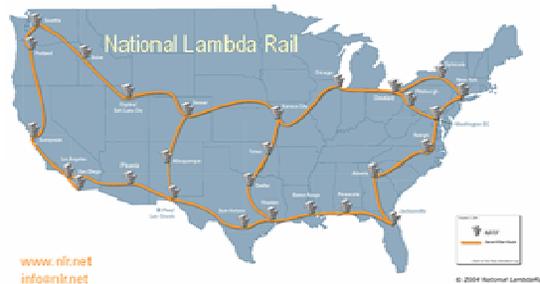
# Broad Science and Engineering Proficiencies



**Environmental Science & Biotechnology**



**Materials Science & Technology**



**Computational Sciences**

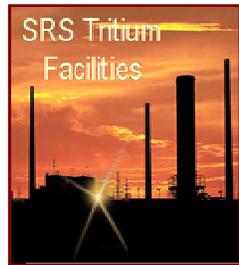


**Analytical Development**

# Diverse Science and Technology Applications

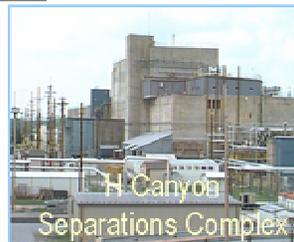
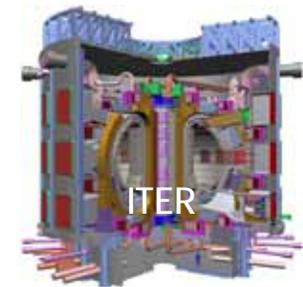
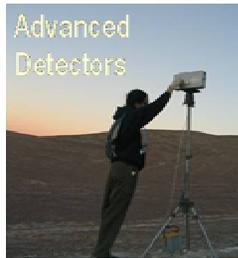
## NATIONAL & HOMELAND SECURITY

- Defense Programs technology
- Nonproliferation technology
- Plutonium technology
- Department of Homeland Security Strategic Partner National Laboratory
- FBI Forensics Support Laboratory



## ENERGY SECURITY

- Nuclear energy
- Hydrogen storage technology
- Thermochemical hydrogen production
- Alternative Energy
- Advanced Fuel Cycle Initiative



# Diverse Science and Technology Partners



Russia



South Korea



NASA



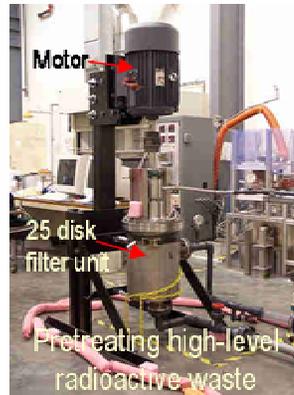
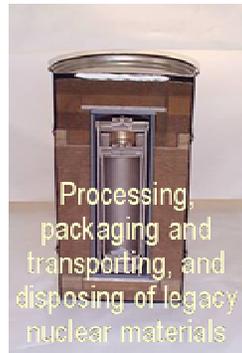
Medical College of Georgia  
GEORGIA'S HEALTH SCIENCES UNIVERSITY



| a new state of mind

# Application to ALL Areas of EM Cleanup

SRNL advances the EM mission by performing and facilitating research and development in ALL areas of EM cleanup



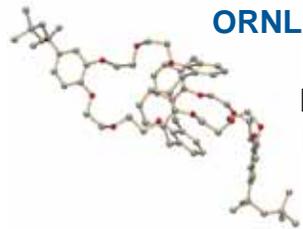
# Engine for Technology Maturation

SRNL works to join basic and applied science to produce technologies for deployment to address EM needs

PAST

CSSX Development

ORNL, SRNL



DOE-SC  
Molecular Design

Flowsheet Testing



EM-20

ARP-MCU

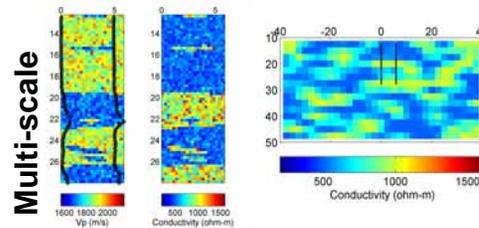


Facility Start-up

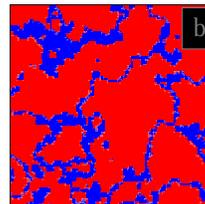
CURRENT

DOE-SC Remediation

SRNL, LBL



Geophysical Characterization



Numerical Experiments on  
Dual-domain transport



SRS

Field Validation

FUTURE

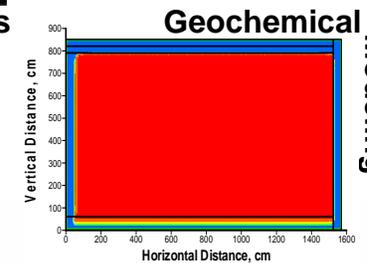
Tc Chemistry for Saltstone PA

SRNL



Basic

Science Studies



Saltstone



# SRNL Results at SRS

SRNL successfully developed technologies and continues to support operating Separations, Treatment, and Disposal facilities

- Apply record of success to other EM challenges



Tritium Extraction Facility – operating tritium processing facility



Defense Waste Processing Facility – operating waste vitrification facility



SRNL



Modular CSSX Unit -operating waste treatment facility



H-Canyon – operating nuclear materials separation facility



Saltstone - operating waste processing & disposal facility



# Complex-wide Technology Development and Demonstration Coordination for DOE-EM



# SRNL Infrastructure Actions

- **Master Plan**

- Retain 773-A for radiological work
- Remediate SED, install improved HVAC
- Create new Research Campus in stages

- **Funding Strategies**

- ARRA stretch funds for source term reduction
- EM-1 sponsored line items for infrastructure
- IGPP funds (added to labor rate)
- Third party financed buildings

Hot Cells



New Campus



# Summary

- **SRNL is an enduring DOE Laboratory**
- **SRNL has**
  - Strong applied science focus
  - Significant core competencies
  - A variety of academic disciplines
  - Evolving capabilities in the national interest
  - Commitment to improving our infrastructure (DOE-HQ)
  - History of delivering technology solutions

