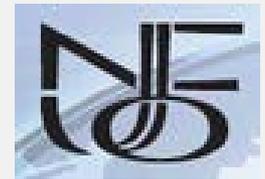


User Environmental, Safety, and Health Practices at the Center for Nanophase Materials Sciences

Scott Hollenbeck
CNMS Operations/ESH Manager

April 21, 2015



***NUFO 2015
Annual Meeting***

***Oak Ridge
National Laboratory***

April 21–23, 2015

Center for Nanophase Materials Sciences (CNMS) – Scott Hollenbeck, Operations/ESH Manager

- One of 5 Nanoscale Science Research Centers (NSRCs) created by the Department of Energy (DOE) as contribution to the U.S. Government National Nanotechnology Initiative (NNI)
- Started operations in 2006; merged with ShaRE (Shared Research Equipment User program) in 2014.
- Synergism between staff and Users, visitors, etc. creates a highly interactive, exciting, and stimulating research environment
- Researchers balance work on in-house research with work on user projects

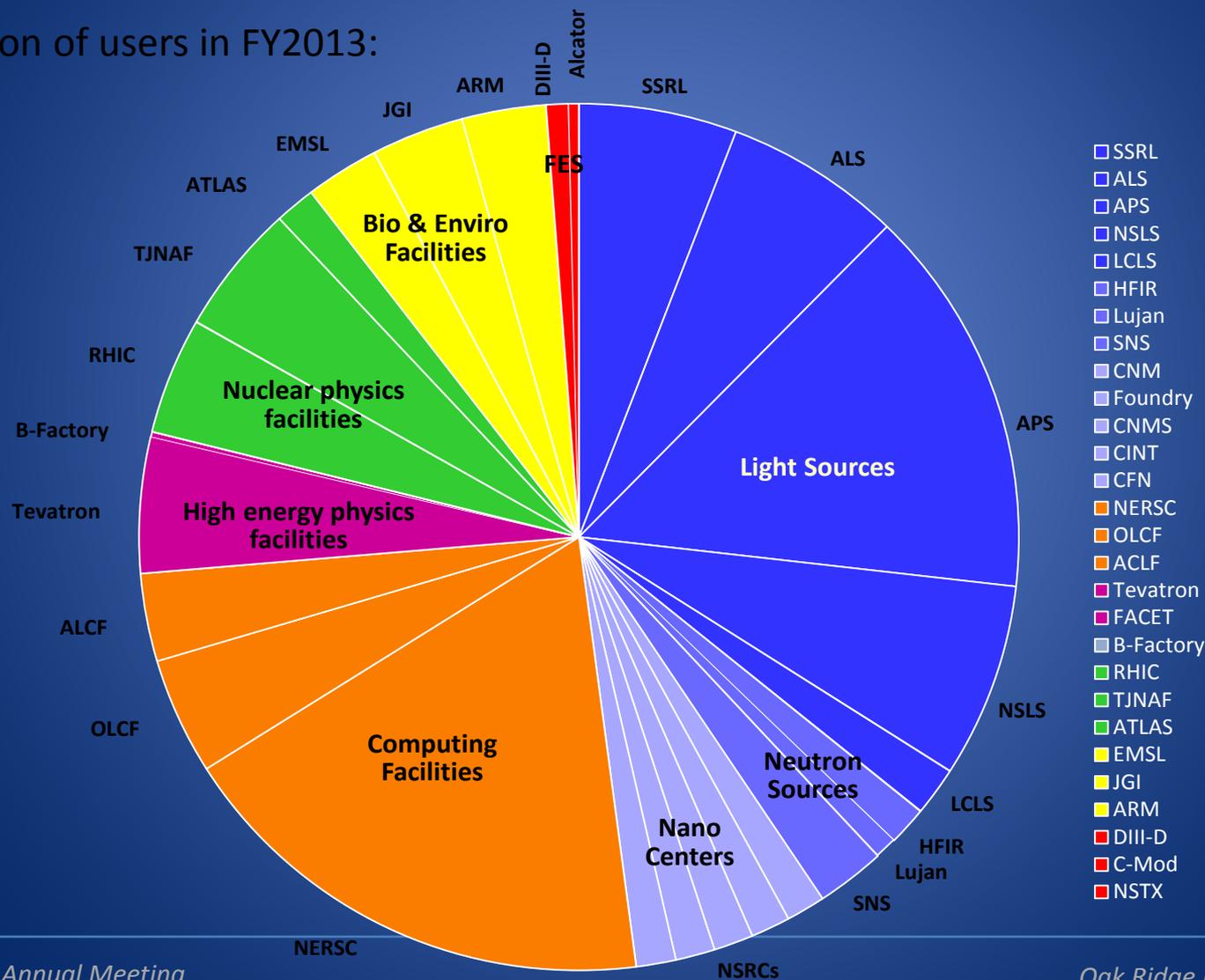
50% of staff time committed to working with users
50% of staff time committed to in-house science

80% of instrument time dedicated to users
20% of instrument time for in-house science

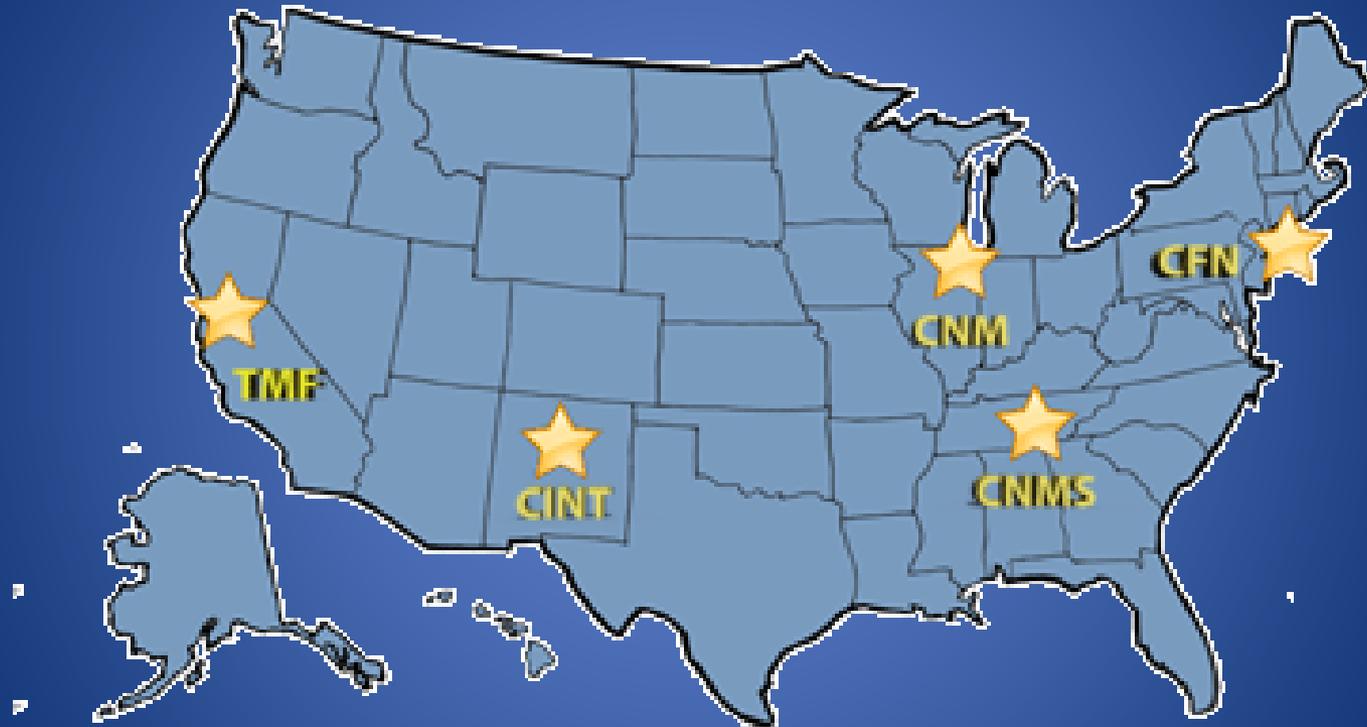


NSRCs are part of the Office of Science "family" of ~30 User Facilities

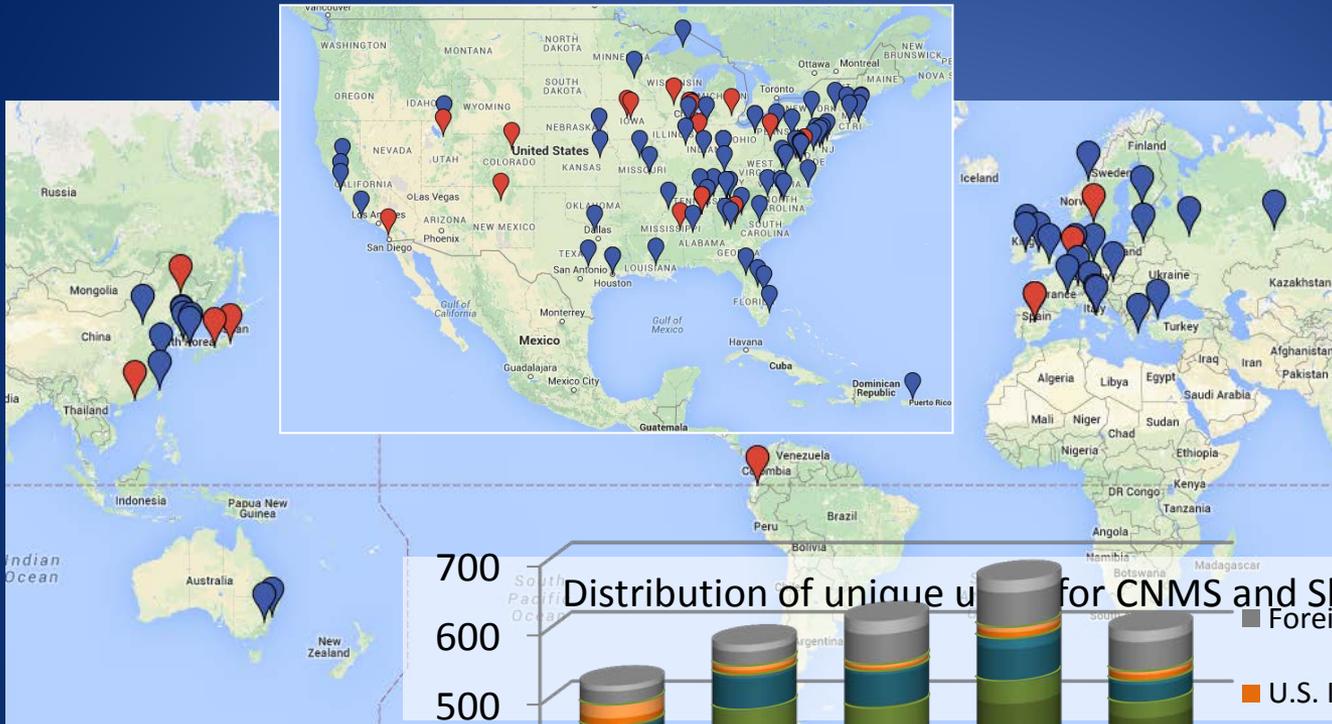
Distribution of users in FY2013:



5 Nanoscale Science Research Centers

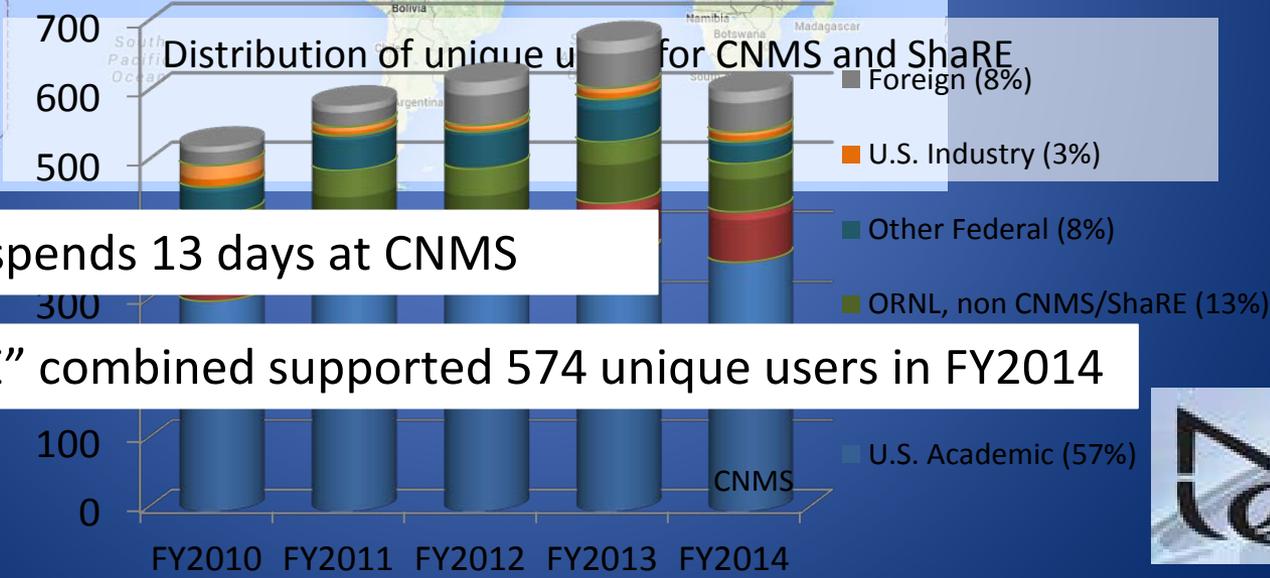


Geographically broad user base



Home institution of

-  FY2014 CNMS user
-  FY2014 ShaRE user



Average user spends 13 days at CNMS

“CNMS+ShaRE” combined supported 574 unique users in FY2014



CNMS User Proposal Process

- 2 proposal calls per year, short 2-page proposal
- Checkboxes for capabilities
- Appendix for neutron resources (mutual acceptance of reviewer scores)
- Evaluation based on technical research feasibility, science merit, and conformity with established ESH envelope
- Timeline of last call:
 - Deadline Oct. 22
 - Feasibility review
 - To reviewers Nov. 9
 - Selection Dec. 12
 - Notifications Dec. 15
 - Work start: Feb. 1, 2015
 - 170 proposals received, 127 proposals approved



What CNMS Does Well (solutions and strategies to challenges)

Plan Training system with respect to Human Performance Improvement (HPI)

Anticipate human and process weaknesses, and eliminate or mitigate causal factors through consistency, capabilities, and systematic approaches. Eliminate hazards through engineering and administrative tools as well as focused training and oversight.

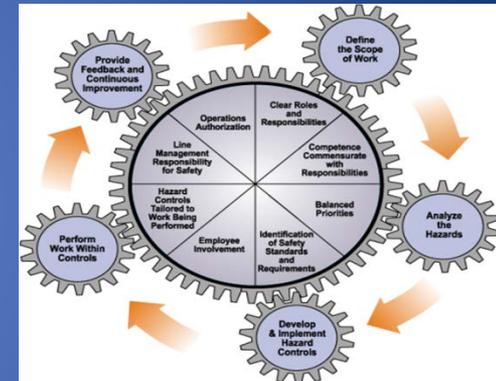
Staff Awareness – Promotion of Safety Culture

Responsibilities include checking user safety
Others (Operations) provide redundant checks
Human interaction and follow-up

Comprehensive User oversight

Users are escorted until training is complete; Lab Space Manager is completely satisfied

Limit activities: Certain processes cannot be done by user (i.e., adding waste to collection areas; operating high-end equipment, chemical manipulation)



Specific User training matrix (allows efficient and effective training)

CNMS USER TYPES AND TRAINING REQUIREMENTS					
User title in SAP	SAP Position in Org	CNMS User Type	Minimum Training Requirements (Q = ORNL training qualification number) Additional training may be required at the Laboratory Space Manager's discretion. Required Training	Optional Training*	by Group (Lab)
User 1	50264244	Off-site Cyber User	ORNL Cyber Security Awareness Training (Q50114529)		Theory - remote
50259948			ORNL Site Access Training ORNL Chemical Hygiene Plan CNMS Orientation CNMS Chemical Hygiene Training CNMS Personal Protective Equipment CNMS RCRA Awareness Training	Rad Safety Training for RGD Operators CNMS Benzene Safety CNMS Hydrofluoric Acid (HF) & Other Fluo CNMS Cryogenic Safety Training CNMS Nanoscale ESH for R&D Operations	
User 5	50259950	Lab User-X-ray User (will operate X-ray diffraction equipment; no exchanging of gas bottles)	ORNL Site Access Training (Q50242139) CNMS Orientation (Q50277581) ORNL Chemical Hygiene Plan (Q50322817) CNMS Chemical Hygiene Training (Q50277654) CNMS Personal Protective Equipment (Q50277617) CNMS RCRA Awareness Training (Q50277613)	CNMS Cryogenic Safety Training (Q50307504)	Imaging (X-ray lab only - Rm. 155)
50259951			ORNL Site Access Training ORNL Chemical Hygiene Plan CNMS Orientation CNMS Chemical Hygiene Training CNMS Personal Protective Equipment CNMS RCRA Awareness Training CNMS Hydrofluoric Acid (HF) & Other Fluo NRL Usage and Safety Manual	Rad Safety Training for RGD Operators CNMS Laser Safety Awareness CNMS Cryogenic Safety Training CNMS Nanoscale ESH for R&D Operations	
			CNMS Hydrofluoric Acid (HF) & Other Fluo CNMS NRL Usage and Safety Manual (Q50286454) CNMS Hydrofluoric Acid (HF) & Other Fluo (Q50277625)		



CNMS User Facility Challenges

Not just dealing with one distinct group – Heterogeneous User Community

Incoming users span all levels of training and experiences; tenured Profs to undergrads – All “experts” in something but may do unfamiliar tasks (i.e., chemical manipulation, lasers, electrical, etc.) at CNMS

Coming from all varieties of institutions (academic, Industrial, government, domestic and foreign)

Cultural differences / language barriers

Programmatic Differences

Most user facilities are government funded and operated

More rigorous procedures (i.e., ESH) for which academic collaborators (Users) might be accustomed

Incidents deemed relatively “minor” outside DOE facilities can make headlines at CNMS

Tendencies/Error Precursors (Time-Pressure)

Visits can last a few hours, days, weeks or months!

In most cases, use of facilities is free however travel, lodging and incidentals are borne by users



Questions?

