

# CNMS Town Hall Meeting Minutes

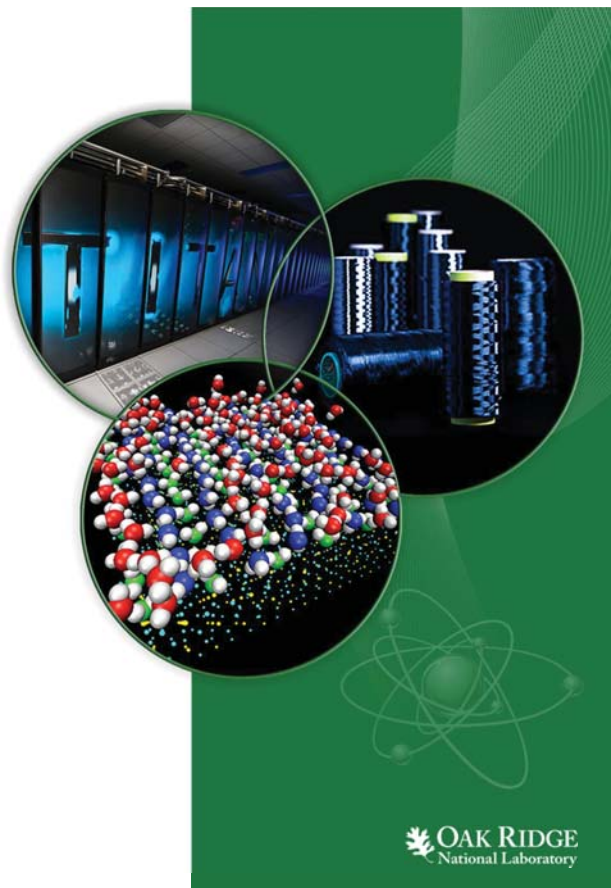
August 2, 2017, Ascribe: Yang Zhang

1. Kate and Lane presented the poster award.
2. Lane updated the status of the UEC – *slides attached*.
  - a. Mission, leadership, and structure of CNMS
  - b. UEC members, special thanks to Tony, Brad, and Sandy
  - c. UEC responsibilities: liaison
  - d. User satisfaction survey statistics and review
  - e. Proposal statistics
  - f. Online proposal portal system, target Spring 2019
  - g. Proposal review criteria/process
  - h. UEC election
3. Questions/Comments? No.

# CNMS Town Hall Meeting

August 2017

ORNL is managed by UT-Battelle for the US Department of Energy



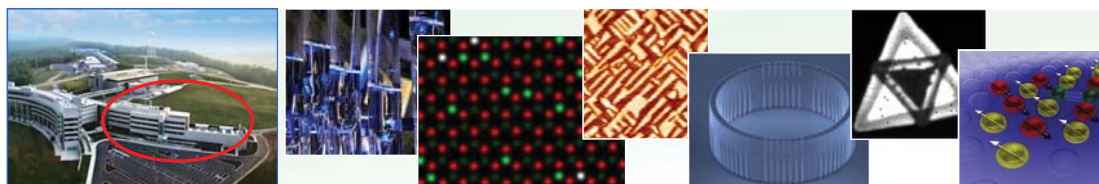
## CNMS is a national user facility with a mission to advance nanoscience

### About CNMS:

- Free access to staff expertise and equipment (if intent is to publish)
- Two proposal calls per year; proposals for short-term projects are accepted continuously
- Simple 2-page proposal
- Joint proposals with neutron sources (SNS, HFIR)

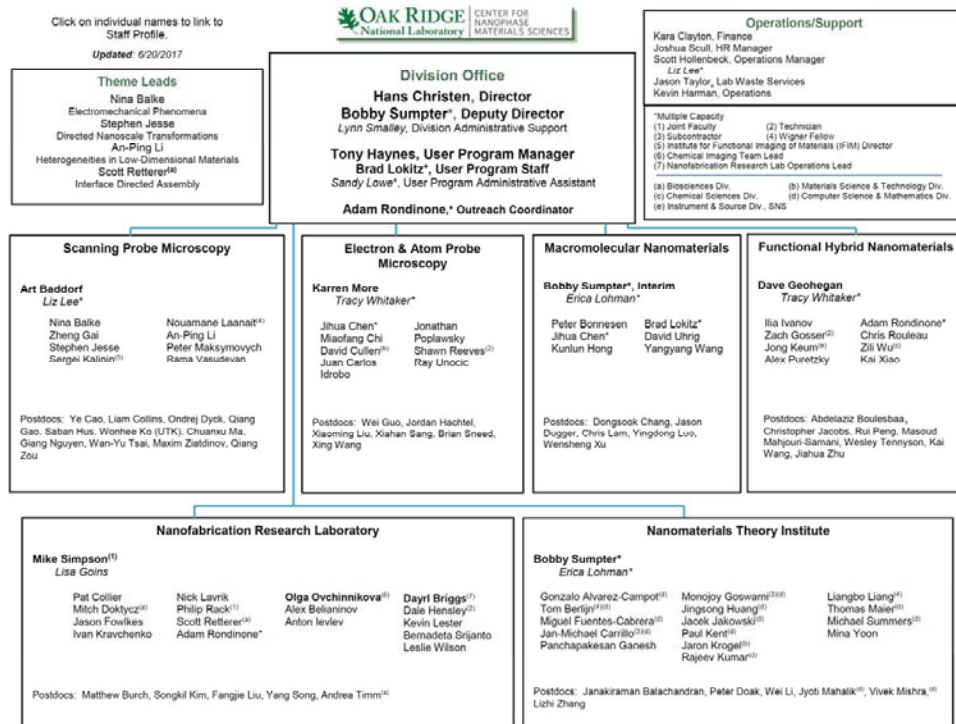
### Research areas:

- **Synthesis** – Soft matter (precision synthesis, selective deuteration), 2D materials, hybrid structures, epitaxial oxides
- **Nanofabrication** – direct-write (3D) fabrication, multiscale fluidics, 1000 sq. ft. cleanroom
- **Advanced Microscopy** – AFM, STM, aberration-corrected and in-situ TEM/STEM, atom-probe tomography, data analytics
- **Chemical Imaging** – multiple approaches based on mass spectrometry or optical spectroscopies
- **Functional Characterization** – laser spectroscopy, transport, magnetism, electromechanics
- **Theory and Modelling** – including gateway to leadership-class high performance computing



CNMS is a Nanoscale Science Research Center supported by the U.S. Department of Energy, Office of Science, Scientific User Facilities Division

# Leadership and Structure of CNMS

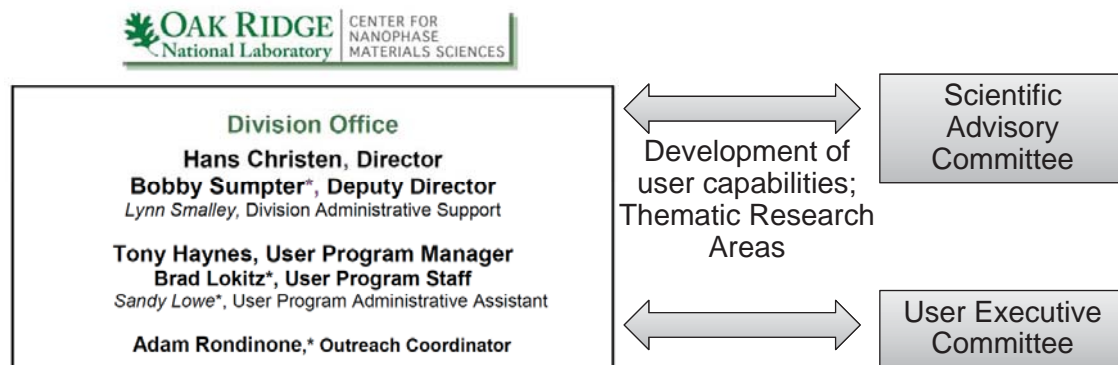


3

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# External Advisory Committees



4

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## CNMS UEC 2017 Members

<b>Chair:</b> Lane Martin (Univ. of California, Berkeley)	2017
<b>Vice Chair:</b> Eric Formo (Univ. of Georgia)	2017
<b>Secretary:</b> Yang Zhang (Univ. Illinois)	2016-2017
<b>Past Chair:</b> Marian (Molly) Kennedy (Clemson Univ.)	2017

### At Large Members:

– Alex Belianinov (ORNL/CNMS)	2016-2017
– Valentino Cooper (ORNL)	2017-2018
– Kathrin Dorr (MLU Halle-Wittenberg)	2016-2017
– Benjamin Lawrie (ORNL)	2017-2018
– Matthew McDowell (Georgia Tech)	2017-2018
– Adam Moule (Univ. California, Davis)	2017-2018
– Evgheni Strelcov (NIST)	2016-2017

### CNMS Staff (non-members):

- Tony Haynes
- Brad Lokitz
- Sandy Lowe
- Hans Christen

**Special thanks to Sandy, Brad, and Tony →  
They keep things together – CNMS/UEC  
couldn't function without them!**



5

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## UEC Responsibilities

### • Tier 1

- Identify issues for users and provide input to CNMS Administration
  - Review *User Satisfaction Survey*
  - Review *Suggestion Box*, provide recommendations for actionable response(s)
  - Solicit input during annual *User Meeting*
  - Advise on *Strategic Plan* updates

### • Tier II

- Organize annual *User Meeting*
- Newsletter
- Oversight for proposal process (submission, evaluation, etc.)
- UEC elections

### • Tier III

- Represent Users at BES on site reviews (e.g., Triennial Review, 2016)
- Attract new users to CNMS

6

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## User Satisfaction Survey

- Response rates:
  - 44% in 2013
  - 35% in 2015
  - 34% in 2016
- Analysis showed that **above 95%** (up from 90% in 2015) of all respondents were either **“very satisfied”** or **“satisfied”** with all aspects of CNMS
- Key issues arising from open-ended responses in 2016:
  - Providing additional resources to strengthen key capabilities (those which are heavily used) within CNMS
  - Better communication – about capabilities, real-time system status/maintenance, *ex post facto* data analysis, between staff and users,...
  - Improve Publication Tracking System – allow user access
  - User services – additional resources for long-term users (like desks, shared lockers)

**Overall very strong agreement that:**  
**1) CNMS staff are helpful and have valuable expertise**  
**2) Visiting CNMS is a positive learning experience for users**

7

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## Equipment Plans

2015

2016

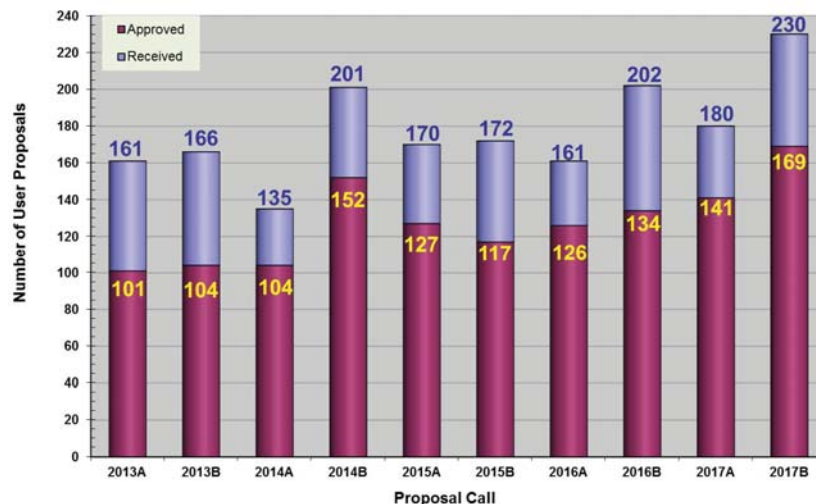
Item	FY needed	Acquisition	Status
Discovery Hybrid Rheometer 2 (TA Instruments)	FY15	New	installed
Protechips Atmosphere 200 for FEI Titan S STEM	FY15	Upgrade	installed
EDS for FEI Titan S STEM	FY15	Upgrade	installed
miBot manipulators, Imina Technologies	FY15	new	installed
Cray CS4000 Cluster Addition	FY15	Upgrade	installed
Controller for VT-STM, SPECS Surface, Nanonis)	FY15	Upgrade	installed
Zeiss Orion NanoFab Scan controller	FY15	Upgrade	installed
Gatan OneView Camera for FEI Titan S STEM	FY15	Upgrade	installed
PDS LABCOTER Parylene deposition system	FY15	new	installed
South Bay Technologies Ion Beam Sputter Deposition System	FY15	new	installed
IonTOF 5 AFM/TOF-SIMS	FY15	new	installed

Item	FY needed	Acquisition	Status
SUSS MicroTEC contact aligner	FY16	new	Installed
Nion Hermes MAC-STEM	FY16	new	Installed
ANASYS NanoIR2	FY16	new	Installed
Broadband dielectric spectroscopy	FY16	new	Installed
RSA-G2 analyzer (dynamical mechanical analysis)	FY16	new	Installed
Mass spectrometry upgrade for He-ion microscope	FY16	Upgrade	Installed
Atomic Force Microscope for Cleanroom	FY16	new	Installed
MALDI-TOF	FY16	Upgrade	Installed
Unisoku upgrade for low-T/high-field STM	FY16	Upgrade	Installed
Interferometer for Cypher AFM	FY16	Upgrade	Installed
Microtome for microscopy sample preparation	FY16	new	Installed
Raman scattering	FY16	Upgrade	Installed
Low-temperature 4-probe SPM	FY16	new	Installed – Upgrades in Aug.

8

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## Proposals Submitted and Approved



- 601 **unique users** in FY16 → Projecting 640 in FY17 (for history: [https://science.energy.gov/~media/bes/suf/pdf/BES\\_Facilities\\_Number\\_of\\_Users.pdf](https://science.energy.gov/~media/bes/suf/pdf/BES_Facilities_Number_of_Users.pdf))
- 363 **general user proposals** in FY 16 → 410 in FY17
- 459 **user proposals** received in FY16 (including 96 Rapid Access) → 489 total proposals to-date in FY17 (including 79 Rapid Access so far)
- 713 **active user projects** during FY16 → ~760 (est.) active projects during FY17

9

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## Proposal Success Rates (FY17)

### 76% Overall Success Rate

- Macromolecular Nanomaterials – 65% of 37 proposals
- Functional Hybrid Nanomaterials – 76% of 51
- Nanomaterials Theory Institute – 85% of 33
- Scanning Probes – 76% of 71
- Nanofabrication – 81% of 97
- Electron and Atom Probe Microscopy – 67% of 149
- Neutron Scattering – of the 5 proposals awarded CNMS time that requested neutrons 3 were given beam time (60%)

10

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## Online Proposal Portal System

- **Online proposal portal system** identified by UEC as a long term goal
- List of “desired” features for online proposal system assembled by UEC
- CNMS allocated resources for User Staff to work with ORNL Applications Management Team to determine project scope, cost, and timeline
- **Deliverables:**
  - Robust online proposal portal system that is integrated with existing ORNL systems (Guest Portal, LRN, PAS) and can be easily upgraded with additional functionalities
  - Mobile friendly interface that accommodates multiple roles and responsibilities (PI, collaborator, reviewer, and CNMS staff, CNMS User Staff) → “One-stop” for all things CNMS
  - Allows for standard & custom reports to be easily generated/exported
- **Timeline:** 6 months of developer time spread out over a 12 month period (estimated)
- **Cost:** \$260,000 (estimated)
- **Target Implementation:** Spring of 2019
  - Soft roll-out for Director’s Discretionary before use in full proposal call

11

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## CNMS Proposal Review Criteria/Process

- Can the CNMS proposal evaluation process be improved?
- Current proposal evaluation form → Reviewer gives an overall proposal score based on scientific merit (1-5) and a score for group capability (1-3)
  - Multiple considerations captured in single measure: importance, breadth of audience, innovation, necessity of CNMS, likelihood of publication in “top” journal...
  - Coarse/simple scale for reviewer, difficult to interpret for PI and CNMS
- Could a multi-question evaluation form...
  - Be easier for the reviewer?
  - Improve reviewer response rates (currently only 60-70% by deadline, pushed to 90% with major effort)?
  - Be more informative for PI, provide more actionable feedback?
- Example: Molecular Foundry asks 4 questions:
  - Scientific Significance and Impact (30 pts)
  - Project Plan (10 pts)
  - Need for Molecular Foundry (10 pts)
  - Relevant Experience (10 pts)
  - Questions for reviewers aligned with questions on proposal
- Goal is to evaluate potential changes to evaluation process that will provide better, more quantitative feedback to CNMS and to prospective Users

12

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## Next CNMS Proposal Call – 2018A

- Announce August 23, 2017
- Deadline October 18, 2017
- Notifications mid-December
- Starts February 1, 2018

13

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## UEC Election Nominations

- Vice Chair (2018)/Chair (2019)
  - Rafael Verduzco (Rice Univ., former UEC at large member)
- Secretary
  - Vikram Bedekar (Timken Company)
  - Zachary Hood (Georgia Tech., grad student)
- At Large Members (3 vacancies)
  - Joshua Agar (UC Berkeley, Postdoc)
  - Thomas Attard (U. Alabama, Birmingham)
  - Josh Kacher (Georgia Tech)
  - Marina Leite (U. Maryland)
  - John Mathis (Embry-Riddle Aeronautical U.)
  - Judson Ryckman (Clemson)

14

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