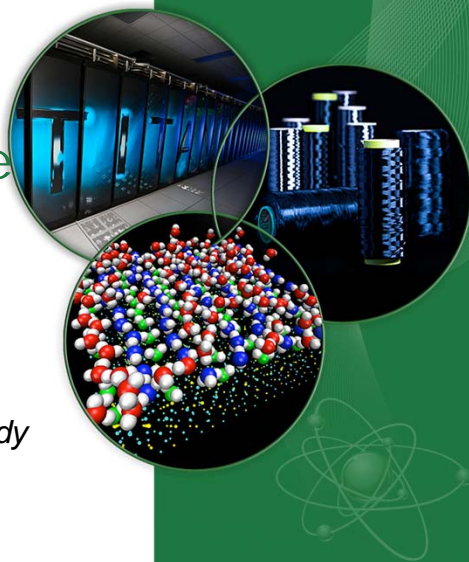


# Welcome to the CNMS Town Hall Meeting

*Marian (Molly) Kennedy*  
*August 2016*

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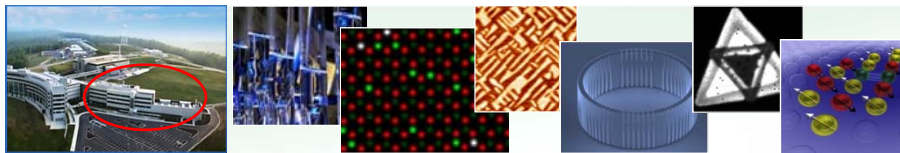
## CNMS is a national user facility with a mission to advance nanoscience

### 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

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## Call for User Proposals: High-Impact Nanoscience Research

- **Proposal Call Opens August 24<sup>th</sup>**
- **Deadline for Submission: October 19<sup>th</sup>**
- **Proposal Notifications: Mid December**
- **Proposal Start Date: February 1, 2017**

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## External Advisory Committees



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## CNMS UEC 2017 Members

**Chair:** Marian (Molly) Kennedy (Clemson U.) *Jan 2016- Dec 2016*

**Vice Chair:** Lane Martin (U. California, Berkeley) *Jan 2016- Dec 2016*

**Secretary:** Yang Zhang (U. Illinois) *Jan 2016- Dec 2017*

**Past Chair:** Nazanin Bassiri-Gharb (Georgia Tech) *Jan 2016- Dec 2016*

### At Large Members:

*Jan 2014- Dec 2016*

- Eric Formo (University of Georgia)
- Enrique Gomez (Penn State U.)
- Megan Robertson (University of Houston)
- Rafael Verduzco (Rice University)

**CNMS Staff (non-members):** Tony Haynes, Brad Lokitz, Sandy Lowe, Hans Christen

*Jan 2015- Dec 2017*

- Alex Belianinov (ORNL/CNMS)
- Evgheni Strelcov (NIST)
- Kathrin Dorr (Martin-Luther U., Halle)

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## UEC Responsibilities

- Tier 1
  - Identify issues for users and provide input
    - Review User Satisfaction Survey
    - Review Suggestion Box
    - Solicit input during annual User Meeting
    - Advise on strategic plan updates
  - Organize annual user meeting
- Tier II
  - Newsletter
  - Oversight for proposal process
  - UEC elections
- Tier III
  - Represent users at BES on site reviews
  - Attract new users to CNMS

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## We need your feedback and your help

- Highlight your work with credit line for CNMS
- Complete annual survey- information reviewed internally and externally
- Provide feedback through the suggestion box
- Participation in proposal review process
- Participate in the UEC

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## User Satisfaction Survey

- Response rates:
  - 44% in 2013
  - 35% in 2015
- Analysis showed **that above 90%** of all respondents were either '**very satisfied**' or '**satisfied**' with all aspects of CNMS.
- Key issues arising from open ended responses:
  - Providing additional resources to strengthen key capabilities within CNMS including both the Macromolecular Nanomaterials group and the electron microscopy facility
  - Improving communication channels between staff and external users
    - to decrease issues related to scheduling equipment
    - maintenance of equipment
    - *ex post facto* data analysis

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## CNMS Equipment Additions

2015

Item	FY needed	Acquisition	Status
Discovery Hybrid Rheometer 2 (TA Instruments)	FY15	New	installed
Protophys 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

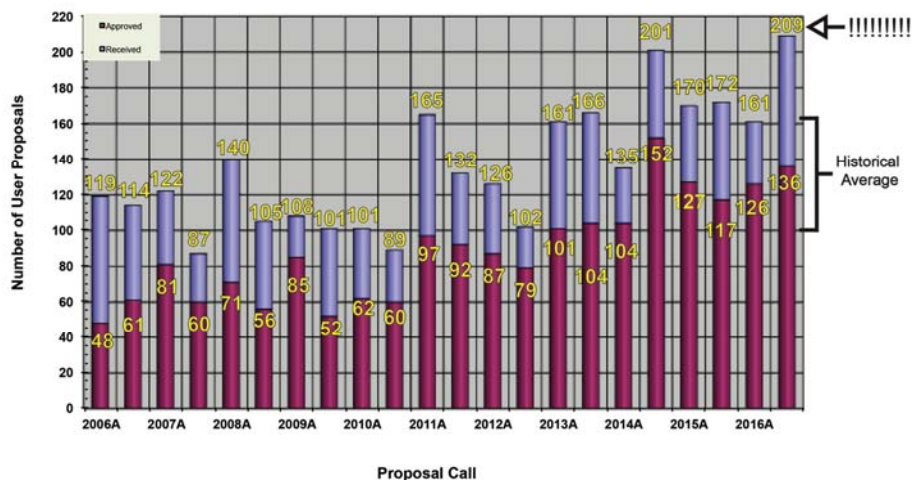
2016

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

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## Proposals submitted and approved



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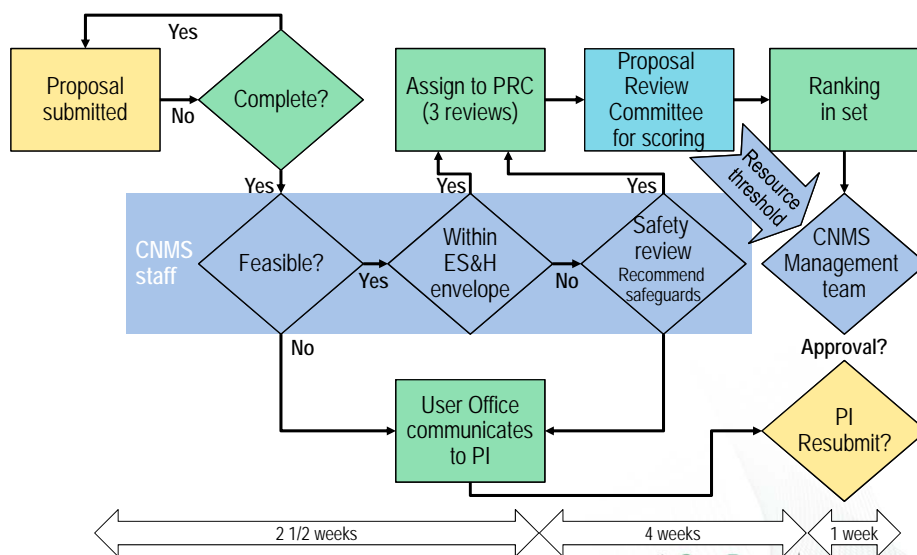
## Proposal Success Rates

- Macromolecular Nanomaterials – 64%
- Functional Hybrid Nanomaterials – 76%
- Nanomaterials Theory Institute – 81%
- Scanning Probe Microscopy – 65%
- Nanofabrication Research Laboratory – 71%
- Electron and Atom Probe Microscopy – 63%
- He-Ion – 67%
- X-Ray – 76%
- Neutron Scattering – of the 6 proposals awarded CNMS time that requested neutrons 4 were given beam time (67%)

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## CNMS proposal review process is designed for fairness and rigor



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## Review Criteria for CNMS Research Proposals

The CNMS expects high-impact, peer-reviewed scientific or technological publications to result from all user research projects. PIs and reviewers should keep this in mind when proposing or evaluating research projects.

- **5 –Extraordinary**

- The proposal involves cutting-edge research of great scientific importance. Proposed research will significantly advance knowledge in a specific field or scientific discipline. Access to the specialized capabilities and/or expertise of the CNMS is essential to the success of the proposed work. I believe this proposal must be supported with the highest priority.

- **4 –Excellent**

- The proposed research is of high quality and has potential for making an important contribution to a specific field or scientific discipline. The work is innovative and is likely to be published in a leading scientific journal. Access to the specialized capabilities and/or expertise of the CNMS is highly desirable for the success of the proposed work. I strongly recommend that this proposal should be supported.

- **3 –Good**

- The proposed research is inventive and likely to produce publishable results. Impact on a specific field or scientific discipline is likely. The proposed work will greatly benefit from access to the specialized capabilities and/or expertise of the CNMS. This proposal should be supported if ample resources are available.

- **2 –Fair**

- The proposed research is interesting but may not significantly impact a specific field or scientific discipline. Publication may or may not result from this research. This proposal should not be supported if the required resources are limited.

- **1 –Poor**

- The proposed research is not well planned or is not feasible. Results would not make important contributions to fundamental or applied understanding, and work is not likely to result in publication. This proposal should not be supported

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## Capability of the Proposing Group

This score should be based on the capability of the proposing team, whose members are listed on p. 1 of the proposal. This score should take into account experience & education, publication record in nanoscale science or nanotechnology or related science field, and whether the team has sufficient and appropriate personnel to conduct proposed experiment/theoretical study in proposed time frame.

- **3 -Excellent**

- The proposing research team is widely recognized in the field with an outstanding record of publication OR is led by junior researchers who have demonstrated exceptional promise for future accomplishment.
- The combination of team members is strong across all technical areas needed to accomplish the proposed research.

- **2 -Good**

- The proposing research team has a solid reputation in the field and a strong record of publication in leading journals, AND
- The assembled group appears to have sufficient expertise across all technical areas required to accomplish the proposed research.

- **1 -Fair**

- The proposing research team has not established leadership in the field nor demonstrated the potential to make outstanding contributions, OR
- The proposal does not provide convincing evidence that the proposing team has sufficient and appropriate personnel to accomplish all of their tasks as outlined in the proposal.

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## UEC Election Nominations

- Vice Chair (Jan 2017-Dec 2018)
  - Eric Formo (U. Georgia)
- At Large Members
  - Vikram Bedekar (Timken)
  - Adam Moule (UC-D)
  - Valentino Cooper (ORNL)
  - Benjamin Lawrie (ORNL)
  - Matthew McDowell (GT)

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## 2017 Joint User Meeting with SNS/SHUG

- August 1<sup>st</sup> & 2<sup>nd</sup>, 2017
- Location: Conference Center
- CNMS Lead Organizer:
  - Lane Martin (U. California, Berkeley)
  - Marian Kennedy (Clemson U.)



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## Feedback Submitted during User Meeting



- Keep user meeting and workshops combined (Sept or Aug)
- Additional expertise in the areas of:
  - Nano-photonics
  - Nano-optics
  - Enhanced Raman capability

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## Long Term Goals August 2016- August 2017

- Identify needs of users, reviewers and staff for potential online portal.
- Implement online proposal portal system
- Organize 2017 shared user meeting with SHUG (August 1<sup>st</sup>- 2<sup>nd</sup>, 2017)

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## Student Poster Awards

Organizer:  
Evgheni Strelcov  
(NIST)



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### **Gold Medal**

Zachary Hood (Georgia Tech)- poster #21

### **Silver Medal**

Jingjie Zhang (University of Virginia)- poster #49

### **Bronze Medal**

Thomas Spencer (Georgia Tech)- poster #09

### **Honorable Mention**

Tyler Cosby (University of Tennessee)- poster #17

Jianhua Ma (University of Virginia)- poster #23

Chanho Lee (University of Tennessee)- poster #41

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