

The **FUTURE** of America is the
RESEARCH of **TODAY**



NATIONAL
USER
FACILITY
ORGANIZATION

NATIONAL USER FACILITY ORGANIZATION

RHIC Annual Users' Meeting

Susan White-DePace

June 14, 2012

Overview

- Who is NUFO?
- NUFO Organization
- NUFO Events
- NUFO Working Groups
- NUFO in the News
- How can you get involved
- Things to Remember



National User Facility Organization

(www.nufo.org)



NATIONAL
USER
FACILITY
ORGANIZATION

The **FUTURE** of America is the
RESEARCH of TODAY

[login]

HOME NEWS EVENTS CHARTER ORGANIZATION FACILITIES MEETINGS REPORTS OUTREACH CONTACTS



Welcome from the NUFO Chair

On behalf of the membership of the National User Facility Organization (NUFO), I wish to extend a warm welcome to you as you visit our website. We hope that you find the resources here to be helpful and informative.

NUFO represents the interests of all users who conduct research at U.S. national scientific user facilities, as well as scientists from U.S. universities, laboratories, and industry who use facilities outside the United States. Founded in 1990, NUFO's primary mission is to facilitate communication among users, user organizations, facility administrators, and other stakeholders and discussion topics include the benefits and significance of research conducted at user facilities, as well as their operational needs. Fundamentally, we strive to provide a unified message at the national level on

UPCOMING EVENTS

NEW [US Science & Engineering Festival](#)

[2012 NUFO Annual Meeting](#)

NUFO NEWS

NEW [New NUFO Working Groups: We Need You!](#)

NEW [2011 Annual Meeting Report](#)

[User Science Exhibition on Capitol Hill](#)

[Fortune 500 Company Science at User Facilities](#)

NUFO IN THE NEWS

NEW [Energy, Enthusiasm, Cooperation, and Commitment Characterize NUFO Annual Meeting](#)

NEW [NUFO Strengthens the Voice of Users \(page 52\)](#)



Who is NUFO?

- NUFO is an organization uniting the national user facilities
- NUFO represents the interests of USERS – scientists who conduct research at US national scientific user facilities, as well as those of US scientists who conduct research at facilities outside the US
- NUFO facilitates communication among users, user organizations, facility administrators, and other stakeholders
- NUFO seeks to provide a unified message at the national level on issues of resources for science, economic competitiveness, and education for the next-generation scientific workforce
- Mission is to educate people regarding the benefits and significance of research conducted at user facilities and their operational needs



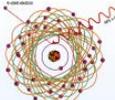
NUFO: Four Pillars

The FUTURE of America is the RESEARCH of TODAY

Birthplace of Fundamental Knowledge

NATIONAL USER FACILITY ORGANIZATION

From the elementary building blocks of nature to the most complex structures in living organisms, the research at National User Facilities contributes significantly to unlocking the mysteries of life, earth, and the universe, as well as advancing new technologies.



Scientists at User Facilities:

- Study life:
 - ribosome structure that leads to proteins in living cells
 - solutions to degenerative diseases (e.g. Alzheimers, Parkinson)
 - solutions to epidemics (e.g. HIV, Hep C)
- Explore the universe:
 - microscopic sub-structure of viable matter in the universe
 - sources for dark matter and dark energy
 - birth and growth of stars and galaxies
 - focus of nature at the smallest and largest scales
- Investigate the earth, energy, and the environment:
 - seismic activity in the world through phase transition simulations
 - catalysis and renewable and alternative fuel options
 - pollutants and toxins in the climate-dependent environment
- Enable technological advances for the next generation:
 - high temperature super conductors for electricity transport
 - materials at the nano-scale for every day applications
 - molecular computing for the next generation data processing



Office of Science National Science Foundation

The FUTURE of America is the RESEARCH of TODAY

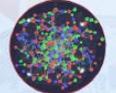
Home of Scientific Achievements

NATIONAL USER FACILITY ORGANIZATION

National User Facility Research, Staff, and Users Are Recognized in National and International Awards.

- 21 Nobel Prizes in the last 50 years (16 in physics, 5 in chemistry)
- Numerous Presidential and National Science Awards
- Hundreds of R&D 100 Awards
- Numerous Professional Society Awards and Fellowships

National User Facility Research Leads to Key Scientific Discoveries.



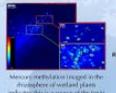
Quark gluon plasma created in collisions is nearly perfect liquid



Bioinspired Oxidic Graphene Hybrid Solar Cell may be alternative to expensive silicon-based cell technologies



Convergent technology used for wiring vehicle core power technology components



Microscopic protein fragment on the atmosphere of wetland plants and archaeobacteria is a source of the trace in the San Francisco Bay



High performing nanobiosensors realized in high-throughput analysis of protein structures



High-throughput research discovered controlling important parameters of protein synthesis

Office of Science National Science Foundation

The FUTURE of America is the RESEARCH of TODAY

Promoter of Economic Competitiveness

NATIONAL USER FACILITY ORGANIZATION

More than 500 Industrial Partners

- Facilitate the advancement of fundamental and applied R&D using the extensive capabilities of our facilities
- Enable discovery and innovation through individual, collaborative, and sponsored research

Alternative energy and efficiency

- Advanced combustion engines and vehicle technologies
- Advanced batteries for energy storage
- Development of more efficient and selective catalysis
- Development of hybrid and flexible solar cells



Materials Design and Discovery

- Development of lightweight materials
- Development of ultra-high strength superalloys
- Development of new semiconductors for advanced computing
- Development of nano-filters for drug delivery and diagnostics
- New materials for medical imaging
- New chemical & biological sensors



Molecular Design and Pharmaceuticals

- Structures of gene products in whole genome sequences
- Drug discovery efforts based on structural mapping (e.g., HIV, Hepatitis C, and Insulin receptors)

Office of Science National Science Foundation

The FUTURE of America is the RESEARCH of TODAY

Cradle of Science Education

NATIONAL USER FACILITY ORGANIZATION

Laying the Foundation of our Technological and Economic Future

- More than 12,000 researchers (approximately 40%) at our user facilities are students or postdoctoral research associates.
- More than 7,100 of our users are graduate students whose advanced degrees will be based wholly or in part on work conducted at our facilities.
- Many of our user facilities offer summer programs for high-school teachers and/or students at various degree levels.



Students and Postdoctoral Fellows trained at user facilities move on to professional careers in academia, industry, and service fields, including aerospace, pharmaceuticals, medicine, transportation, and energy.

Top Young Innovators recognized by Technology Review

Winners of Presidential Early Career Award for Scientists and Engineers



Office of Science National Science Foundation

NUFO Demographics

- 45,000 scientists working at the 46 largest federally-funded user facilities
- Facilities are located in 17 states
- Facilities are primarily by DOE and NSF
- Institutions from every state in the union work at user facilities
- Represent ~ 600 universities in the U.S. and 400 more universities from abroad
- 400 companies work at user facilities; 45 Fortune 500 companies, and 22 Fortune 100 companies, scores of small businesses
- More than 7,100 students and postdoctoral researchers



NUFO: Organization

- NUFO is organized into two major branches: User Organization Representatives and User Administrators. Both branches work together closely to fulfill the overall NUFO mission.
 - User Representative focus primarily on outreach activities (e.g., User Science Exhibition)
 - User Administrators focus on streamlining processes to facilitate access (e.g., benchmarking)
- Elected Steering Committee (3 user representatives, 3 user administrators, 3 elected members, up to 5 appointed members)
 - Business is done primarily via weekly teleconferences
 - Meet in person once/twice a year
- Anyone who is currently or has been associated with a national facility may ask to become a Friend of NUFO
- Anyone associated with a user facility can join a Working Group

NUFO Organization



The header of the NUFO website features the logo on the left, the tagline "The FUTURE of America is the RESEARCH of TODAY" in the center, and a "[login]" link on the right. Below the header is a navigation menu with the following items: HOME, NEWS, EVENTS, CHARTER, ORGANIZATION, FACILITIES, MEETINGS, REPORTS, OUTREACH, and CONTACTS. The "ORGANIZATION" menu item is expanded, showing a list of sub-items: Friends of NUFO, Steering Committee Members, User Administrators, User Representatives, and Working Groups. To the right of the navigation menu, there are two sections: "UPCOMING EVENTS" with a link to "2012 NUFO Annual Meeting--REGISTRATION OPEN" and "NUFO NEWS" with a link to "NUFO NEWS".

USER REPRESENTATIVES

User Representatives List Sever: Only members can post to this list.

Name	Affiliation	Facility	Location	Email	Phone
Gerard Andonian	SLAC National Accelerator Laboratory	Facility for Advanced Accelerator Experimental Tests (FACET)	SLAC National Accelerator Laboratory	gerard@physics.ucla.edu	310-206-5584
Greg Beaucage	University of Cincinnati	Spallation Neutron Source (SNS)	ORNL	BEUCAG@UCMAIL.UC.EDU	513-556-3063
Greg Beaucage	University of Cincinnati	High Flux Isotope Reactor (HFIR)	ORNL	BEUCAG@UCMAIL.UC.EDU	513-556-3063
Walter Brisken	National Astronomy and Ionosphere Center (NAIC)	National Astronomy and Ionosphere Center (NAIC)	Puerto Rico	wbrisken@nrao.edu	575-835-7133
Dennis Brown	Northern Illinois University	Advanced Photon Source (APS)	ANL	debrown@niu.edu	630-910-5512



NUFO: Working Groups

1. Administrative Affairs
2. Cyber and Computing Affairs
3. Social Media Outreach
4. University Relations
5. Industrial Access and Interactions
6. User Data Management

Mission Statement
List Server Link
Members List
Join a Working Group

UNIVERSITY RELATIONS WORKING GROUP

[Join This Working Group]

The NUFO University Relations Working Group was formed in July 2011. Its purpose is to facilitate communication between the national user facilities and the full spectrum of universities (public and private, research- and teaching- oriented, and domestic and foreign). The primary mechanism for communication is through facility users based at universities, but NUFO also wants to inform potential users at other institutions, including faculty, post docs, and students, about the research opportunities available at national user facilities. Our goals include the following:

- Making university administrators and trustees aware of the important resource provided by national user facilities, which enable research in areas that would be prohibitively expensive for individual universities to undertake. These in-kind contributions by federal agencies enable a wide range of grant-supported research and education to occur.
- Working with the AAU (Association of American Universities, 59 member universities in the U.S.) and the APLU (Association of Public and Land Grant Universities, 218 member universities in the U.S.) to inform universities of the resources available at national user facilities
- Countering ignorance about national user facilities often encountered at universities, including perceptions of competition, low utilization, lack of suitability for education, low funding, and lack of credit to universities.
- Communicating the benefits to graduate and undergraduate students of conducting research at national user facilities, which can broaden their education, challenge them by exposing them to internationally- competitive research, and lead to an array of career opportunities.

University Relations Working Group List Server: This list server is moderated.

Members

Co-chairs - Rene Bellwied (U. of Houston), Eric Gawiser (Rutgers University), Susan White-DePace (BNL)

Name	Affiliation	Email
Sue Ewing	Thomas Jefferson National Accelerator Facility	ewing@jlab.org
Gary Findley	University of Louisiana at Monroe and LSU CAMD	findley@ulm.edu
Staci West	Environmental Molecular Sciences Laboratory	staci.west@pnl.gov



NUFO 2012 Events*

- AAS meeting in January
- AAAS meeting in February
- APS meeting in February
- User Science Exhibition on Capitol Hill in March
- USA Science and Engineering Festival in April
- NUFO Annual Meeting in June
- ACA Meeting in July



*Unable to attend ACS and MRS meeting in 2012

User Science Exhibition in DC



User Science Exhibition in DC



Advanced Photon Source

The Advanced Photon Source is the brightest storage-ring source of x-rays in the western hemisphere. The facility is an invaluable aid for researchers who are trying to solve the difficult and challenging problems faced by our complex, high-tech world.

An Overview

Lighting the Way

The APS provides the energy light-producing x-ray source that is used for studying the structure and properties of chemical and biological molecules. It is the only source of light in the world that is so bright, so intense, and so well controlled that it can be used to study the structure and properties of molecules and materials, and to study the structure and properties of materials.

Meeting the Challenge

In 2009, the APS was selected as one of the nation's premier research facilities. The APS is the only particle accelerator in the U.S. that is open to the public. The APS is the only particle accelerator in the U.S. that is open to the public. The APS is the only particle accelerator in the U.S. that is open to the public.

ENERGY Office of Science Argonne National Laboratory



Center for Nanoscale Materials

This national user facility provides capabilities explicitly tailored to the creation and understanding of new functional materials on the nanoscale.

An Overview

Variety in the Spice of Life

The Center for Nanoscale Materials user program offers researchers a wide range of capabilities to study the structure and properties of materials, from the atomic to the molecular level. The center provides a wide range of capabilities to study the structure and properties of materials, from the atomic to the molecular level.

Premier Tools Enable Breakthroughs

The center provides researchers with a wide range of capabilities to study the structure and properties of materials, from the atomic to the molecular level. The center provides a wide range of capabilities to study the structure and properties of materials, from the atomic to the molecular level.

ENERGY Office of Science Argonne National Laboratory



Relativistic Heavy Ion Collider

At the Relativistic Heavy Ion Collider (RHIC) at Brookhaven National Laboratory, physicists from around the world are exploring the earliest moments of the universe, the most fundamental particles of matter, and the forces through which they interact.

An Overview

Light-Speed Collisions

RHIC is a 2.4-kilometer-long, ring-shaped accelerator that accelerates heavy ions to nearly the speed of light. The ions are then collided, creating a hot, dense state of matter called a quark-gluon plasma. The quark-gluon plasma is a state of matter that existed in the early universe, and it is the most fundamental particles of matter.

Looking Ahead

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Scientific Accomplishments

Quark-Gluon Plasma

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Exotic Findings

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Proton Spin Mystery

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Benefits Beyond Physics

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ENERGY Office of Science Brookhaven National Laboratory



National High Magnetic Field Laboratory

The National High Magnetic Field Laboratory develops and operates world-leading high magnetic field facilities used by a multidisciplinary community of over 1100 researchers. In 2011, those users came from 125 US universities and institutions (and from another 111 universities and institutions abroad). The laboratory is funded by the National Science Foundation, the state of Florida and is additionally supported by Los Alamos National Laboratory.

An Overview

A Unique Resource

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Centralized Expertise

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ENERGY Office of Science Los Alamos National Laboratory



Oak Ridge Leadership Computing Facility

The OLCF is the nation's most powerful supercomputing center, dedicated to open scientific research.

An Overview

OLCF Overview

The OLCF provides users with the most powerful computing resources in the world. The OLCF provides users with the most powerful computing resources in the world. The OLCF provides users with the most powerful computing resources in the world.

Leadership Computing

The OLCF provides users with the most powerful computing resources in the world. The OLCF provides users with the most powerful computing resources in the world. The OLCF provides users with the most powerful computing resources in the world.

ENERGY Office of Science Oak Ridge National Laboratory OLCF



National Radio Astronomy Observatory

The National Radio Astronomy Observatory (NRAO) enables forefront research into the Universe as radio wavelengths, designing and operating the world's largest and most capable radio telescopes for use - day and night - by professional scientists.

An Overview

Seeing the Invisible Universe

The National Radio Astronomy Observatory (NRAO) enables forefront research into the Universe as radio wavelengths, designing and operating the world's largest and most capable radio telescopes for use - day and night - by professional scientists.

Equipping Tomorrow's Explorers

The National Radio Astronomy Observatory (NRAO) enables forefront research into the Universe as radio wavelengths, designing and operating the world's largest and most capable radio telescopes for use - day and night - by professional scientists.

ENERGY Office of Science National Radio Astronomy Observatory



User Science Exhibition in DC

FORTUNE
500

Industrial Interactions Aerospace / Transportation

Ball Aerospace

Industrial Interactions Chemical

Corning
CORNING

Industrial Interactions Energy

GE

Industrial Interactions Health

Industrial Interactions Information Technology

IBM

Small Business Interactions

Ramgen Power Systems

Oak Ridge Leadership Computing Facility

Ramgen Power Systems is developing supersonic shock compression technology for the reduction of atmospheric CO₂ through carbon capture and sequestration. The company utilized OLCF to model the flow of gas around moving and non-moving parts in the turbomachine used for compressor. The simulations, which are significantly faster to execute than the production of physical prototypes, are reducing the time required to create the design for the machine.

Energy

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NUFO: Testimony to Committee on Science, Space, and Technology

RALPH M. HALL, TEXAS
CHAIRMAN

EDDIE BERNICE JOHNSON, TEXAS
RANKING MEMBER

U.S. HOUSE OF REPRESENTATIVES
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY

2321 RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, DC 20515-6301
(202) 225-6371
www.science.house.gov

June 11, 2012

Dr. Antonio Lanzirotti
Chairman
National User Facility Organization
The University of Chicago – CARS
9700 S. Cass Ave., Bldg. 434A
Argonne, IL 60439

Dear Dr. Lanzirotti:

On Thursday, June 21, 2012, at 9:30 a.m. in Room 2318 of the Rayburn House Office Building, the Subcommittee on Energy and the Environment of the Committee on Science, Space, and Technology will hold a hearing entitled “*Department of Energy User Facilities: Utilizing the Tools of Science to Drive Innovation through Fundamental Research.*” The purpose of this hearing is to examine the role the Department of Energy’s (DOE) national scientific user facilities play in enabling basic research that drives innovation and economic growth. Additionally, the hearing will examine challenges and opportunities associated with user facility planning and management.



USA Science & Engineering Festival, DC



What has NUFO Done for You?

- 2009 NUFO report on participation by Industrial Users in Research at National User Facilities: Status, Issues, and Recommendations was submitted to the Office of Science
- In 2009-2010 NUFO invited to worked with the DOE to rewrite Order 142.3A (Foreign Visits & Assignments)
- In 2011 NUFO was asked again by DOE to comment on suggested further changes to the Order
- In 2011 NUFO was asked by the General Counsel for Technology Transfer and Intellectual Property at DOE to comment on a re-evaluation of the User Agreements
- In 2011 compiled a list of scientific research done by Fortune 500 Companies which was used by Office of Science at testimony to Congress
-

What has NUFO Done for You?

- In 2011 invited to organize a User Science Exhibition for the House
- December 2011 invited to speak at the Association of American Universities meeting to discuss universities and user facilities
- In 2012 received invitation to organize a User Science Exhibition for both the House and the Senate
- 2012 NUFO invited to testify at a Science, Space, and Technology Subcommittee on Energy and Environment hearing titled “Department of Energy User Facilities: Utilizing the Tools of Science to Drive Innovation through Fundamental Research”

NUFO In the News

INTERNATIONAL BUSINESS TIMES

US

According to the National User Facility Organization, which represents the 30,000 scientists, engineers and students who conduct research at the national laboratories, closing the facilities would have a devastating effect on America's ability to remain a global scientific leader.



NUFO strengthens the voice of 'users'

The National User Facility Organization (NUFO) represents the interests of 30,000 users who conduct research at 39 national scientific user facilities in the US, as well as scientists from US universities, laboratories and industry who use facilities in other countries. This includes SLAC, Jefferson Lab, Fermilab, the Oak Ridge, Argonne, Brookhaven, Lawrence Berkeley and Los Alamos national laboratories, as well as astrophysics facilities, their user organizations and the organization for US users of the LHC at CERN.



NUFO User Science Exhibition



NUFO holds Science Exhibition on Capitol Hill

C&EN

Serving The Chemical, Life Sciences & Laboratory Worlds

CHEMICAL & ENGINEERING NEWS

NUFO Gains A Voice

The National User Facility Organization advocates for scientists who use federal labs

By [Rajendrani Mukhopadhyay](#)

Department: [Government & Policy](#)
Keywords: [NUFO](#), [laboratories](#), [user](#), [federal](#)

[\[+\]Enlarge](#)



Much like a person, the [National User Facility Organization \(NUFO\)](#) is coming of age at the 21-year mark. The independent organization, which represents more than 30,000 users of 39 federally funded research facilities, has grown from a group focused solely on internal administrative activities to one that also advocates for scientists and performs public outreach.

The development of NUFO's more unified voice for the needs and interests of the



How Can You Get Involved

- Consider either individually or in small groups contacting or visiting federal representatives to educate them on the importance of your science and the role that user facilities in that science
- Be a NUFO liaison at your university or corporation
- Help educate your colleagues by spreading the word about NUFO
- Volunteer to help fulfill NUFO's mission
- We need ideas and suggestions in planning user facility symposium at professional society meetings
- If you identify a concern that broadly affects facility users, let us know.

Remember

- Users have a voice through NUFO
- NUFO needs your help
- You are the best spokespersons for the scientific and economic value of user facilities in our nation
- Describe your connection to user facilities and your scientific achievements using them when you speak about your science

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