

APS ALL-HANDS MEETING



DENNIS MILLS
APS Deputy Director

APS All Hands Meeting
September 28, 2016

AGENDA

- APS Update – Denny Mills
- APS-U Update – Dean Haeffner

SAFETY

- Machine tool custodian & operator qualification methods have been set by Argonne
 - Anyone already qualified on user shop machine tool usage by Joliet Junior College process is OK
 - Otherwise, a qualified shop custodian can qualify operators using the Argonne provided training material and forms. (Custodian must have recent qualification on specific machine tools in specific shops.)

- Machine tools must be inspected annually by custodian
 - Argonne using FMAX database – as not all resident users have access, Clay White will serve as custodian for affected resident users
 - Inspection forms are being provided for specific machine tool categories and must be used for inspection

ENTRY PLACARDS FOR HAZARDOUS AREAS

Clearly there is room for improvement in the signage postings of hazardous areas.

A working group was established in FY15 to improve safety-related signage.

Intent is to standardize signage without duplicating specified postings.

KEEP CURRENT WITH UPDATES

TO REPORT: Injury, illness, fire, explosion, radioactive or toxic material release, utility failure, or other emergency.

DIAL 911

OFF-SHIFT NOTIFICATION: Person to be notified if abnormal condition is found in this room.
(Building 212 Room DL-106A)

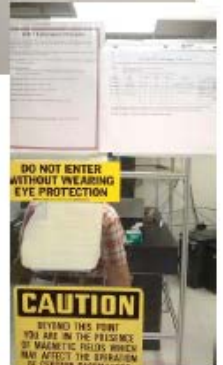
1. Dileep Singh	630-904-6368	or
Name	Home Phone	
2. Roger Smith	630-554-3769	or
Name	Home Phone	
3. Bryan Wozny	630-854-2776	
Name	Home Phone	

ANL-308 (3-04) Date Posted 11/12/2013

REDUCE CLUTTER AND CONFUSION



IMPROVE VERBAL & VISUAL CONSISTENCY



PROPOSED ENTRY PLACARDS

Divisional ESH coordinators and User ESH Group will determine how APS will implement the new placards (which signs will remain and which must be removed).

Beamline staff will be consulted regarding existing signs.

Emergency Contact Information

Entry Requirements

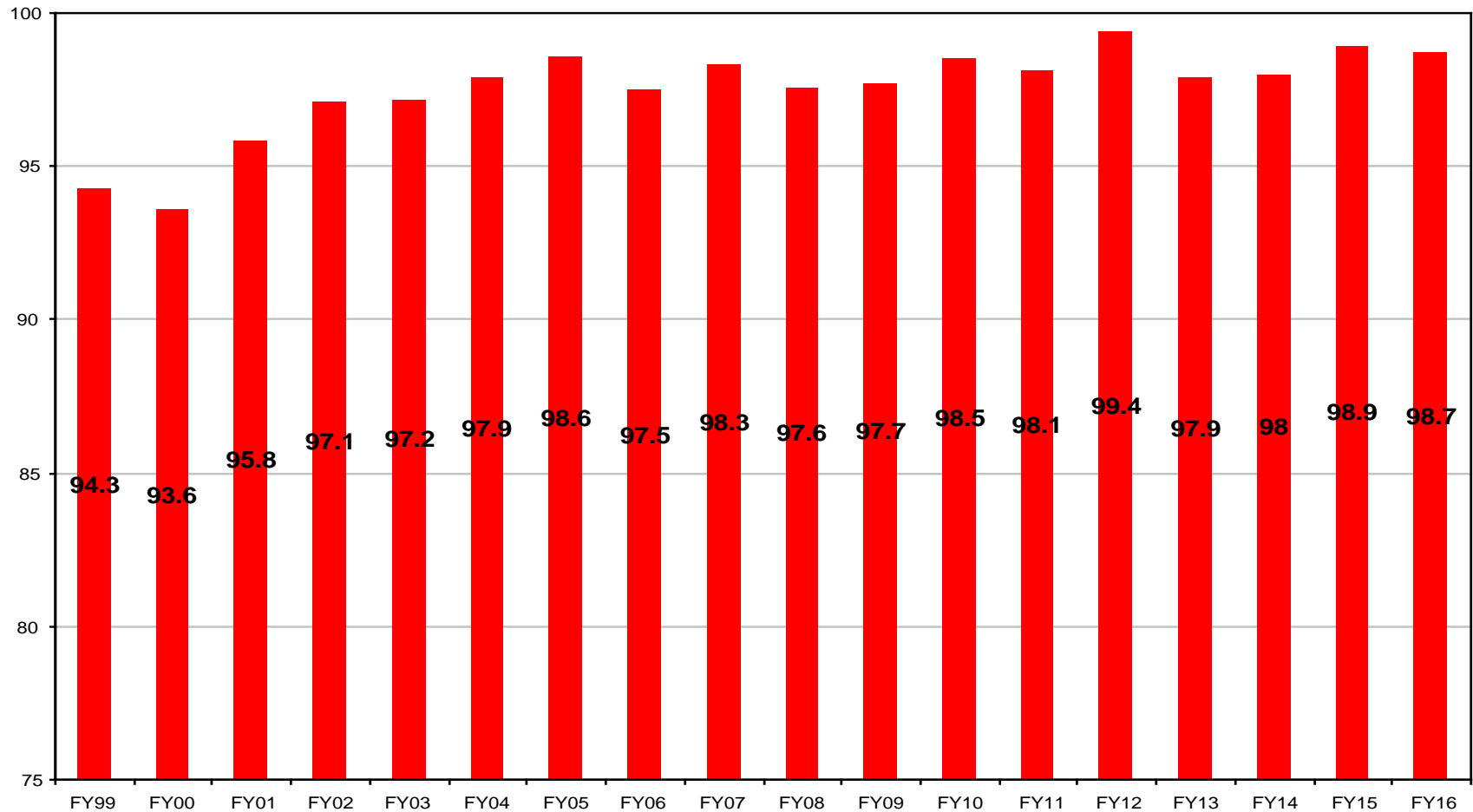
- safety glasses
- hearing protection
- etc.

Hazards

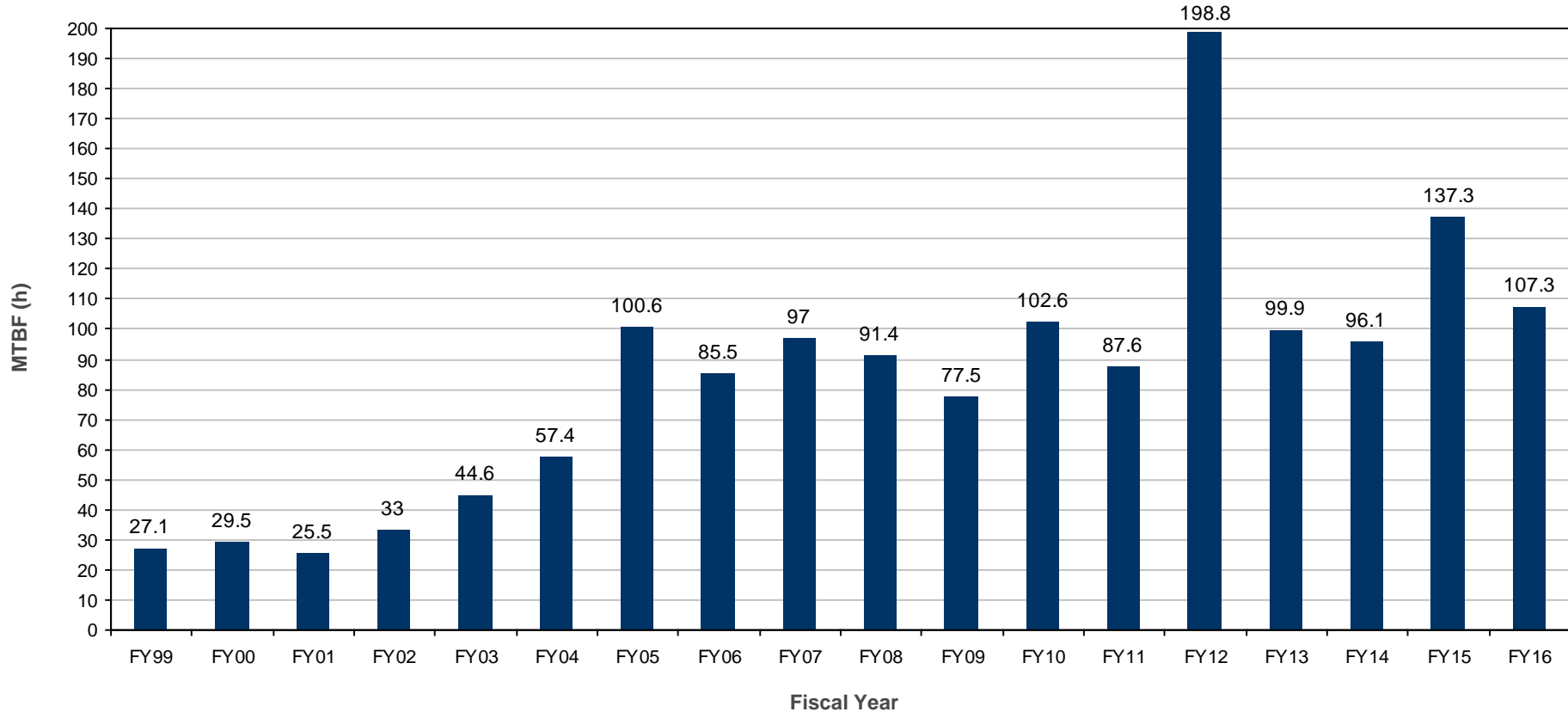
- laser radiation
- flammable materials
- etc.



ACCELERATOR AVAILABILITY FOR FY16 (97.7%) CONTINUES TO BE SUPERB!

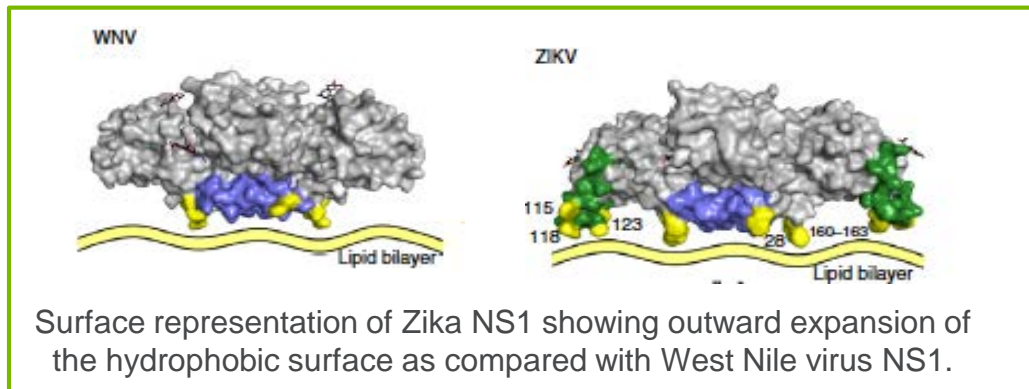


MEAN TIME BETWEEN FAULTS (MTBF) ALSO EXCELLENT FOR FY16 AT OVER 100 HRS



WORKING TO STOP ZIKA VIRUS

- Non-structural protein 1 (NS1) in this family of viruses is thought to be involved in the following functions:
 - Colonization in the host
 - Inhibition of the host's immune response
 - Entry into and exit out of cells
 - Obtaining nutrition from the host
- To gain complete structural details for understanding ZIKV NS1 function, researchers* using the APS solved a 1.9-Å-resolution structure of the full-length virus, providing insights into membrane interaction and variability in the protein surfaces.



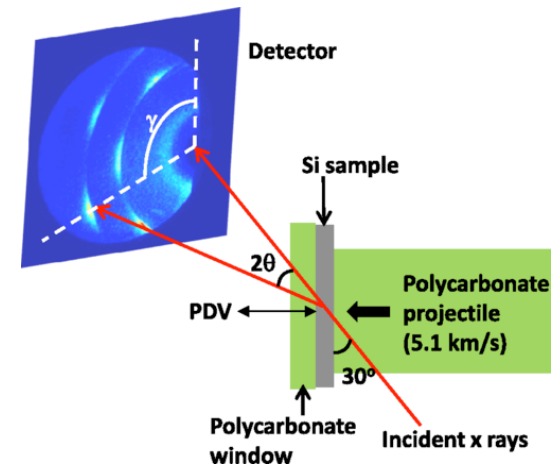
X-ray data was collected at the National Institute of General Medical Sciences and National Cancer Institute (GM/CA-XSD) facility at Sector 23.

“Having the structure of the full-length Zika NS1 provides new information that could help guide the design of a potential vaccine or antiviral drugs,” said senior author* Janet Smith (U of Michigan).

*W Clay Brown, David L. Akey, Jamie R. Konwerski, Jeffrey T. Tarrasch, Georgios Skiniotis, Richard J. Kuhn, and Janet L. Smith, “Extended surface for membrane association in Zika virus NS1 structure,” [Nat. Struct. Mol. Biol.](#), published online 25 July 2016.

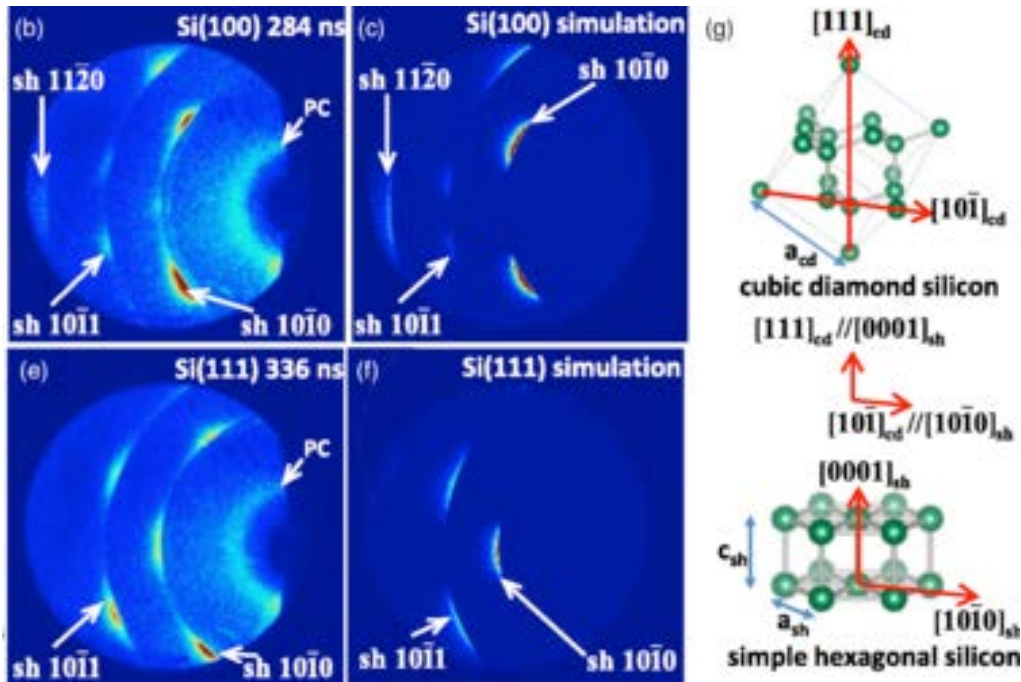
DYNAMIC COMPRESSION STUDIES @ DCS

DIFFRACTION STUDIES OF SHOCK-INDUCED STRUCTURAL CHANGES IN SILICON



S.J. Turneaure*, N. Sinclair, and Y. M. Gupta, Phys. Rev. Lett. **117**, 045502 (2016)

DIFFRACTION FROM SHOCKED SINGLE-CRYSTAL Si



(b)–(c) Results and simulations for Si(100) shocked to 19 GPa.
 (e)–(f) Results and simulations for Si(111) shocked to 19 GPa.

- The nature of the measured diffraction rings in (b) and (e) indicate a significant preferred orientation for the high-pressure simple hexagonal (sh) structure.
- More importantly, these results for shock-compressed single-crystal silicon provide the first direct evidence for the orientation relations between ambient cubic diamond silicon and a high-pressure silicon structure (simple hexagonal) during stress-induced structural transformations, and provide the data to assess the validity of MD simulations of compression-driven structural changes.

NEW INITIATIVE: DIRECT BEAM-QUALITY REPORTING FROM USERS TO MAIN CONTROL ROOM

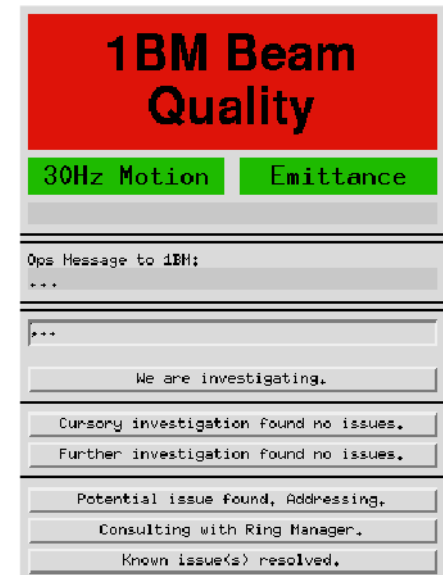
- Developed direct communication tool between MCR and beamlines
- Main Features:
 - Alerts operators to hard-to-detect problems
 - Fine-tunes criteria used by MCR in assessing beam quality
 - Helps beamlines determine if problem is local or global
 - Forestalls or encourages beamline-side investigation
- **Presentation on beam quality reporting tool by Greg Fystro is scheduled for October 10 at 14:00 in A1100**

Preview

- When user has a suspected beam-related problem: clicks this button to report it



- MCR gets an alarm, and provides rapid feedback
- Everyone then sees how many problems are reported ring-wide



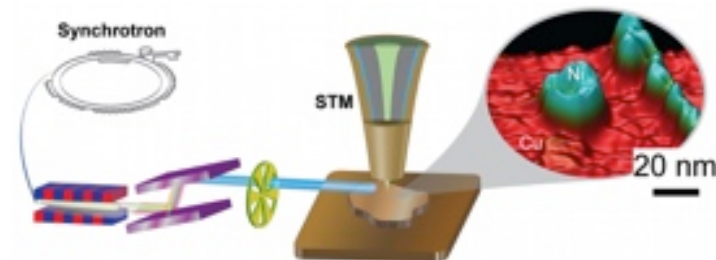
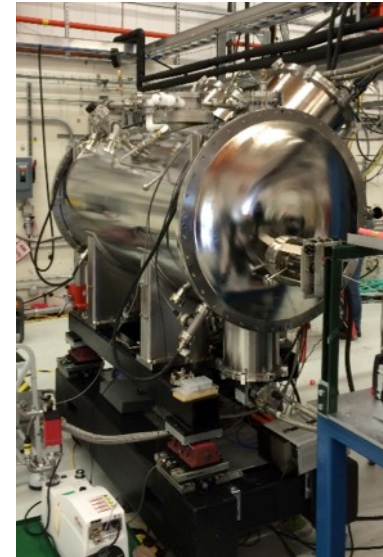
XSD BEAMLINE UPDATES

▪ New SCU for 6-ID

- SCU0 (1.6-cm-period, 0.33-m) device being replaced by SCU2 (1.8 cm period, 1.1 m)
- Stable cryogenic operation observed for two-month test period
- Design field of 0.96 T achieved
- Installed during September shutdown

▪ XTIP – Synchrotron X-ray Scanning Tunneling Microscope (SX-STM)

- Experiments with SX-STM currently being conducted on 4-ID-C
- Canting angle on 4-ID will increase (270 μ rad to 400 μ rad) to eliminate instabilities caused by 4-ID-D low-gap operation (work planned for May 2017)
- Installation of branch-line planned for end of 2017; installation of FOE components to extract x-rays scheduled for Jan. 2018 shutdown



JONATHAN LANG NAMED XSD DIRECTOR

Jonathan Lang has been appointed Division Director of the Advanced Photon Source's (APS's) X-ray Science Division (XSD), part of Argonne's Photon Sciences (PSC) Directorate. His appointment is effective Sept. 19, 2016.

Since 2013, Jonathan has been Associate Division Director of XSD, the latest in a series of positions he has held since joining Argonne in 1993. Throughout his career at Argonne, Jonathan has demonstrated his strong leadership, project management, and research abilities, which make him the ideal person for this important job.



Many thanks go to Mark Beno for his leadership as Interim Director of XSD, in which capacity he served just short of one year. Mark will be a senior advisor to Jonathan for beamline development/projects.

NEW COMMUNICATOR: KAREN MELLEN

- Matrixed to PSC from Communications, Education and Public Affairs (CEPA)
- Bridge to CEPA, continue communicating about APS/APS-U to stakeholders
- Allison+Partners
 - Vice President, Corporate
 - Global communications firm with 23 offices and more than 300 colleagues worldwide.
- Burson-Marsteller, Chicago
 - Director, Media and Corporate Practice
 - Global public relations and communications firm headquartered in New York City
- FD Business Communications (Chicago and New York City)
 - Vice President
 - Global agency dedicated to business communications, with specialist expertise in the life science industry
- Former journalist
 - Chicago Tribune Metro reporter, covering education, legal matters, government, health care
 - Also: Daily Southtown and Kankakee Daily Journal



BOG AWARDS & PACESETTERS

2016 BOARD OF GOVERNORS AWARDS

- **Outstanding Service**
 - Joseph Gagliano (AES)
 - Edward Theres (AES)
- **Harris Ward Fellowship**
 - Jennifer Grimmer, daughter of John Grimmer (ASD)



PACESETTER AWARDS

- **Alex Deriy (XSD/IMG)** - Extraordinary efforts to identify new technology for APS safety-critical systems and successfully implementing that technology to increase efficiency while reducing costs.
- **Diane Wilkinson (PSC/APSU)** - Extraordinary efforts in preparation for successful design reviews, Director's Review, and DOE Review.
- **Ali Mashayekhi (XSD/MPE)** - For developing innovative, robust, and cost-effective sample holders to study activated materials at the APS.
- **Ray Ziegler (XSD/TRR)** - For successfully completing 2 larger-scale infrastructure projects at the TRR beamlines during the May 2016 shutdown. The projects increased operational reliability and scientific capabilities without negatively impacting TRR General User time.

Pacesetter Award recipients: Please hang around after the meeting for photos.

AWARDS AND RECOGNITIONS

SERVICE AWARDS

- Congratulations to the following individuals for their dedicated service to Argonne National Laboratory for **25+ years**:
 - **Michael Bosek** (AES-MED)
 - **Thomas Fornek** (PSC-APS-U)
 - **Jeffrey Toeller** (AES-ADM)

HONORS

- **John Freeland** (XSD-MM) was named Senior Fellow of the Northwestern Argonne Institute for Science and Engineering (June 2016).
- **Karena Chapman** (XSD-CMS) was named one of Chemical & Engineering News's (C&EN's) "Talented 12" for 2016.
- **Deming Shu** (XSD-ADM) was a co-winner of the 2016 Microscopy Today Innovation Award for work done in collaboration with BNL/NSLS-II Hard x-ray Nanoprobe team. This award highlights the 10 best microscopy innovations each year.
- **Junjing Deng** (XSD-MIC) received the Werner Meyer-Ilse Memorial Award given to young scientists for exceptional contributions to the advancement of x-ray microscopy through either outstanding technical developments or applications, as evidenced by their presentation at the "International Conference on X-ray Microscopy" and supporting publications.

2016 3-WAY MEETING – DESY, HAMBURG

The 3-Way (3 continents actually, but 4 facilities: APS, ESRF, PETRA III, SPring-8) was hosted by DESY

Wednesday, 14 September 2016

Optics Workshop (*Assoufid, Gog, Conley, & Huang*)

Thursday, 15 September 2016

Facility Status Reports and Science Highlight (*Streiffer & Mills*)

Parallel Sessions

1. Data policy, big data, fast evaluation (*Schwartz & Gursoy*)
2. Complementary laboratory infrastructure and special sample environments (*Almer & Balasubramanian*)
3. Nano positioning and stability (*Preissner & Shu*)
4. Machine developments (*Decker & Haeffner*)

Friday, 16 September 2016

New developments in superconducting undulators (*Doose*)

Serial crystallography at x-ray FELs and SR sources

Workshop and Parallel Session Summaries

Next 3-Way Meeting will be hosted by APS in the Spring of 2018

UPCOMING MEETINGS

- Oct 05 – 5-Way Meeting of BES Facility (ALS, APS, NSLS, SSRL, LCLS) Directors @ SLAC
 - Beamline capabilities roadmap
 - Data strategy and policies
 - Beamline value engineering
 - R+D requirements as driven by next generation beamlines
- Oct 09 to Oct 14 – 2016 North American Particle Accelerator Conference (NAPAC), Chicago, IL
- Nov 09 to Nov 10 – APS Scientific Advisory Committee (SAC) Meeting, APS
- Nov 11 – 100 Years of Powder Diffraction Mini-Symposium, APS 401/A1100

QUESTIONS??