

NSLS-II Update



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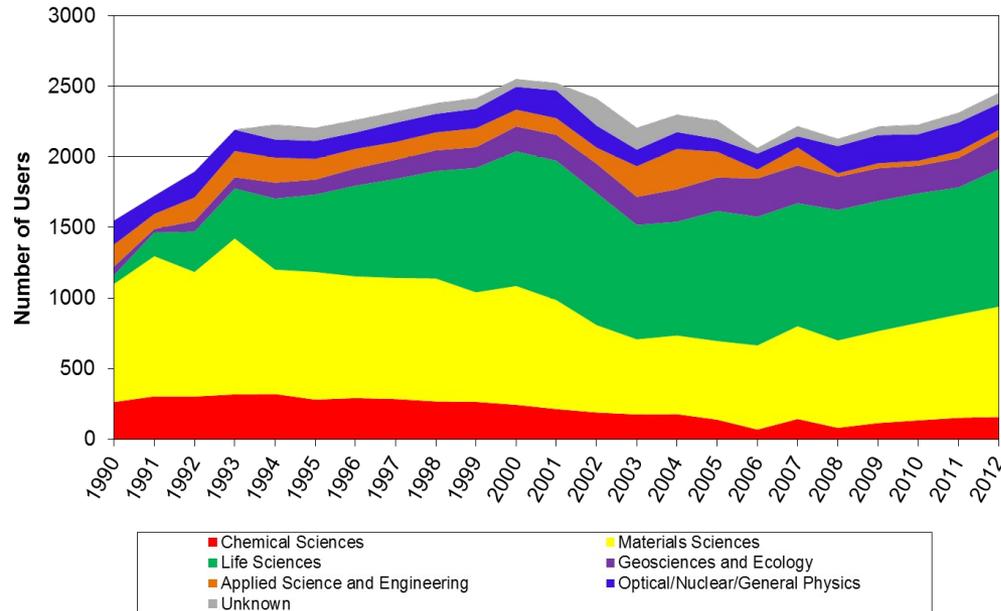
NSLS X6A Symposium
February 1, 2013

FY12 Report: NSLS Continues to Be Productive

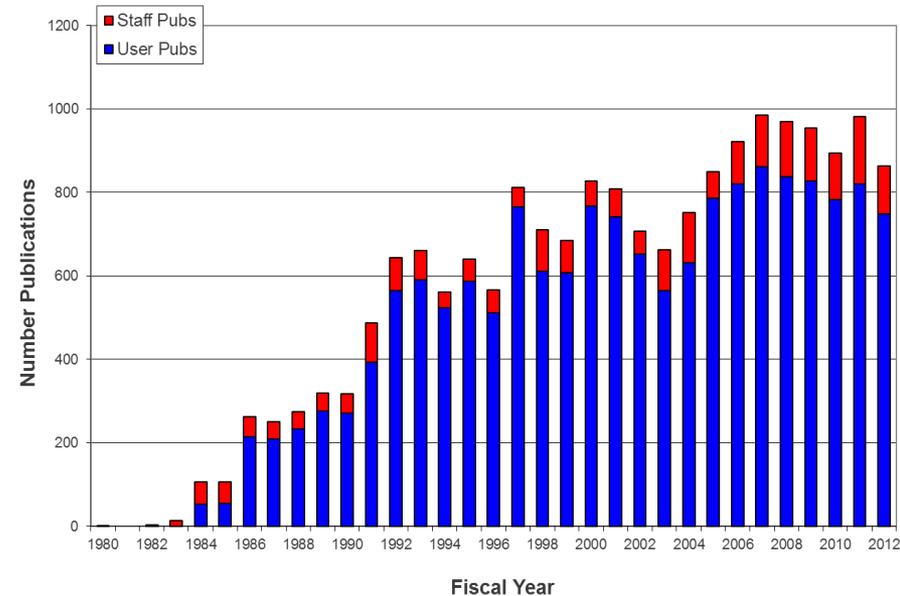
- ~2400 users in FY2012

- ~ 900 publications per year since 2006

NSLS Users by Field of Research



NSLS Facility User & Photon Sciences Staff Publications Fiscal Years 1980 through 2012



NSLS-II Project Status

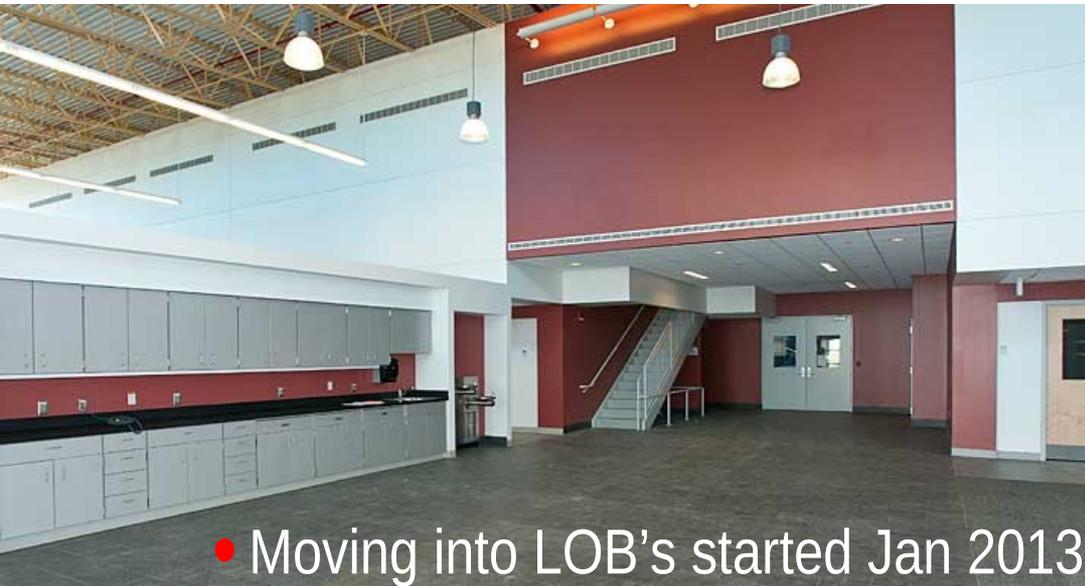
Overall Project:

~85% complete as of Dec '12 on budget & on schedule

- Impressive amount of work (\$157M) completed during FY12
- Current projection of project completion June 2014, with CD-4 in June 2015



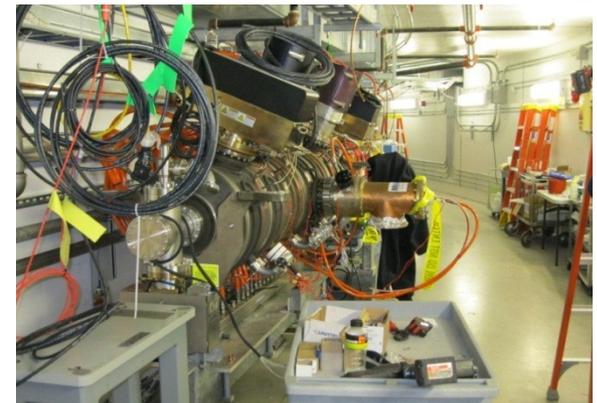
Conventional Construction Essentially Complete



- Moving into LOB's started Jan 2013

Accelerator Systems Status

- Installation of injector complex is almost complete; LINAC commissioning started
- Storage Ring installation is advanced; All magnet girders installed
- Integrated testing is ongoing in parallel with installation which helps maintaining schedule
- Insertion devices under production; 1st damping wiggler delivered



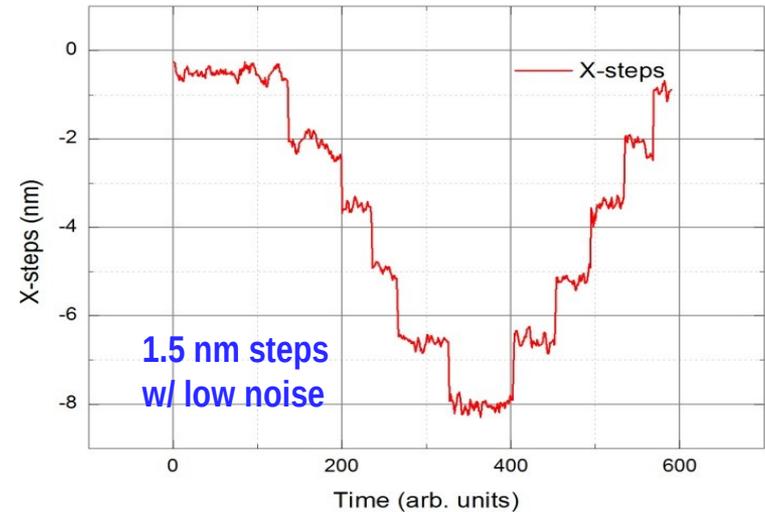
Beamline Hutch Installation Status

- 11 Hutch Structures Erected at NSLS-II
- Panels for 4½ hutches delivered to the site
- Additional panels in fabrication at GPS for the final 2½ hutches.
- Fabrication at GPS facility has improved with added manpower and additional work shifts
- Acceptance testing begun at 23-ID-A
- Expecting completion of hutches in April 2013
- Installation of hutch utilities has started.

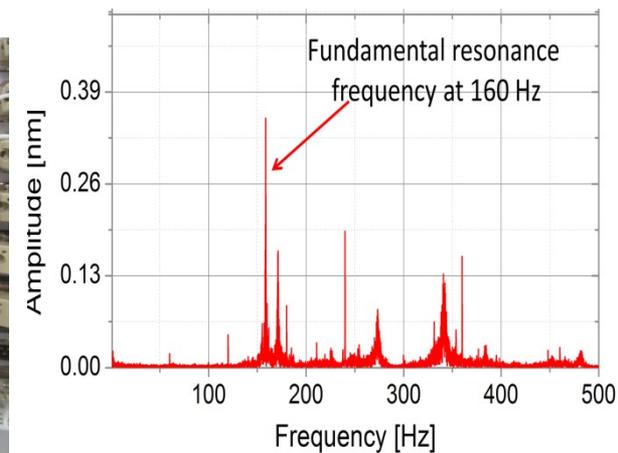
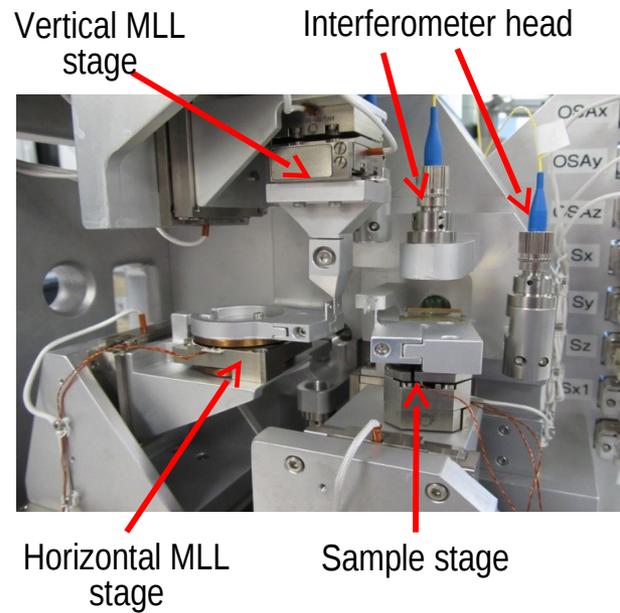
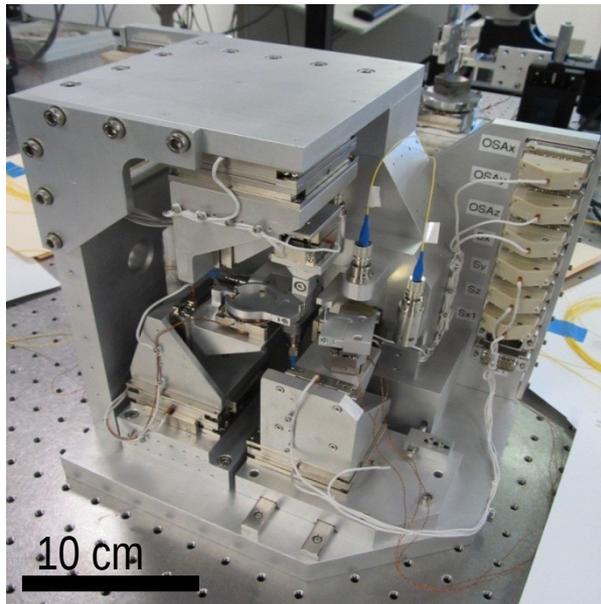


HXN X-ray Microscope Development

- Completed the assembly of MLL module:
 - performed dimensional verification and cable management
 - no resonance frequency below 160 Hz
 - achieved scans with 1.5nm steps with extremely low noise in ambient conditions.
 - achieved open-loop positioning stability of ~4nm/hr in ambient conditions



MLL module performs as expected!



NSLS-II Experimental Tools (NEXT) Status

- DOE-BES funded \$90M MIE project 5-6 beamlines, ready for commissioning with x-ray beam, to expand BES beamline portfolio
- Scientific programs complementary to NSLS-II Project beamlines

ESM -- Electron Spectro-Microscopy

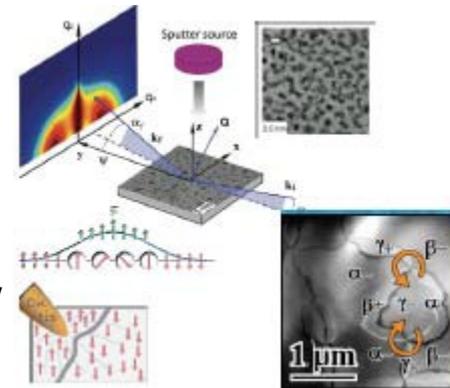
ISS -- Inner Shell Spectroscopy

SIX -- Soft Inelastic X-ray Scattering

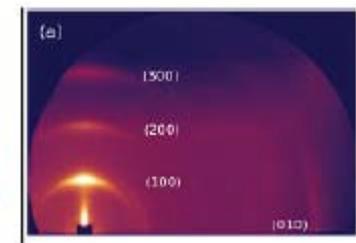
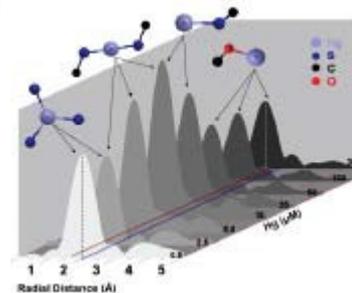
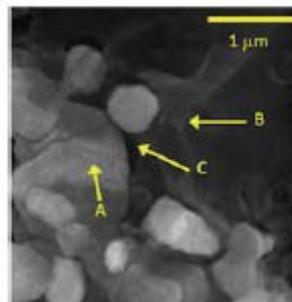
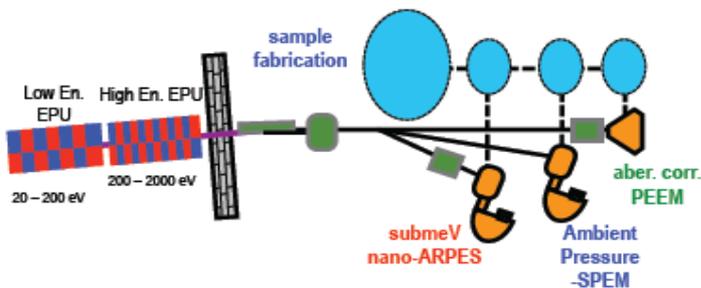
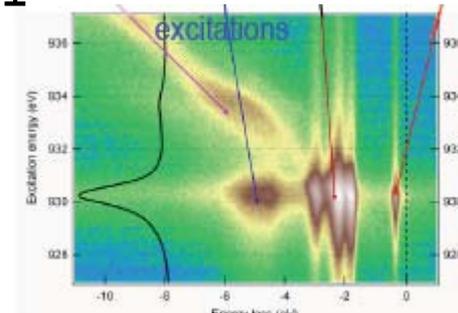
FXI -- Full-field X-ray Imaging

ISR -- In-Situ & Resonant X-Ray Study

SMI -- Soft Matter Interfaces

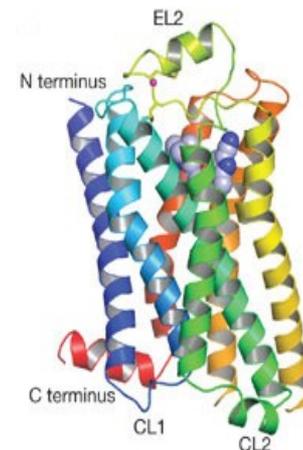
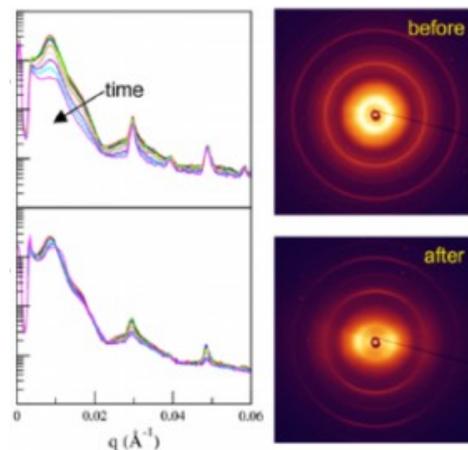


- Successful CD-1 review Sep, 2011 led to CD-1 approval Dec, 2011
- NEXT staff and Beamline Advisory Teams (BATs) in place
- Successful ALD review August 7-9 of preliminary design
- DOE CD-2 review held for Sep 11-13, 2012
- Operations to begin 1QFY17



ABBIX Project Status

- Advanced Beamlines for Biological Investigations with X-rays (ABBIX)
 - NIH funded \$45M project to build 3 beamlines to support the needs of the life sciences community at NSLS-II
 - AMX** – Highly Automated Macromolecular Crystallography
 - FMX** – Frontier Macromolecular Crystallography
 - LIX** – High Brilliance X-ray Scattering for Life Sciences
- Project Schedule:
 - Successful “CD-1” Review held on Jan 17-18, 2012
 - ABBIX staff & Beamline Advisory Teams in place
 - Successful Project Review June 26-27
 - Final Design Review 2Q FY13
 - Start Installation 1Q FY14
 - Complete Integrated Testing 4Q FY15
 - Operations to begin 1Q FY16



Maximizing and Leveraging Resources

- Photon Sciences is committed to maximize the usage of existing available resources by engaging the user community and by leveraging expertise and resources in the community
- Plan to transfer NxtGen beamlines from NSLS to NSLS-II being refined
- Photon Sciences has been supporting and will continue to support grant applications by external groups to various funding agencies for the development of cutting-edge experimental facilities in partnership with NSLS-II. Examples include:
 - NSF grant of ~\$4M by Case Western Reserve University to build a wiggler-based X-ray footprinting (XFP) beamline at NSLS-II
 - NSF instrumentation grant to Stony Brook University to build a tender X-ray microprobe instrument for the Tender Energy X-ray Spectroscopy (TES) beamline at NSLS-II
 - BER commitment of additional funding to start the development of a combined Spectroscopy and MX 3-pole wiggler (SM3) beamline at NSLS-II

Summary

- NSLS continues to be a highly productive facility
- NSLS-II continues to make excellent progress, on schedule, on budget, rapidly approaching end-game; NEXT and ABBIX progressing well
- Working with community to leverage limited resources and maximize impact
- A lot of exciting changes coming in CY2013: 'big move' in Photon Sciences, start of NSLS-II storage ring commissioning, start of NSLS-II beamline components installation, start of NEXT and ABBIX procurements, etc.
- Looking forward to starting commissioning and working on early science at NSLS-II beamlines in ~18 months!

