

# APS/Users Operations Monthly Meeting

J. Murray Gibson  
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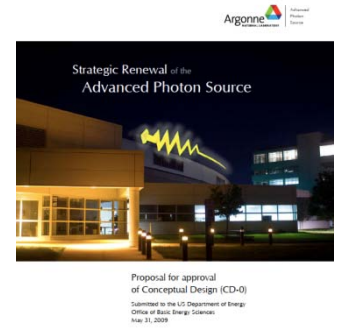
# Agenda

- 2:30 p.m. Refreshments
- 2:45 p.m. APS Update – Murray Gibson
- 3:05 p.m. An X-ray Free Electron Laser (for Record-High Spectral Purity and Brightness) – Kwang-Je Kim
- 3:25 p.m. 2009 Chemistry Nobel Prize Winners – Andrzej Joachimiak
- 3:45 p.m. Adjourn



# Update

- 2010 Energy and Water Bill passed by House and Senate (awaiting President's signature)
  - Relatively promising, but earmarks could affect final budget numbers
    - we should have numbers in a couple weeks
- APS Renewal (now called Upgrade, APS-U) is on track
  - Rehearsing a draft of mission need presentation for DOE HQ this Friday
    - asked to identify scope more definitively for CD-0; used SAC guidance on flagship beamlines
      - all beamlines will have optics/FE upgrades (if needed) to cope with 150-200mA
      - 30 new IDs included
      - Many beamlines will have investments; open sectors completed
    - will share refined CD-0 scope with community after BES feedback and input
    - still plenty of opportunity to input into detailed scope during CD-1
  - Expect CD-0 in a couple months; Asking for \$10M funding this year to prepare CDR and carry out key R&D on superconducting undulator and SPX crab cavity
  - Once CD-0 is signed we can formalize project structure and begin detailed planning for the Conceptual Design Report



# Glimpse of components in current APS-U scope

- Accelerator and x-ray source upgrades

- Short-pulse x-rays
- 8 long straight sections (8m)
- Superconducting (3) and optimized undulators (26) for many beamlines
- Increased stability
- Increased operating current retaining 6.5MHz bunch pattern

- New and upgraded beamlines

- Extreme conditions
- Imaging and coherence
- Ultrafast dynamics
- Interfaces under realistic conditions
- High-resolution spectroscopy
- Proteins to organisms and nano-assembly
- All beamlines upgraded for higher current

Combination of large projects, e.g. long imaging beamline, and many smaller projects to optimize leadership and capacity

Plan for possible future expansion (e.g. leveraged funds from other agencies) and hope to use much of 35% contingency to expand BL scope

- Enabling technical capabilities

- Computer and software
- Detector development facility and expanded pool
- Optics and nanopositioning



# Preliminary Schedule

<b>Milestone Event</b>	<b>Goals</b>		
<b>CD0 Approval</b>	<b>(3 months)</b>	<b>FY10-Q2</b>	<b>Jan/ Feb 10</b>
<b>CD1 Approval</b>		<b>FY11-Q2</b>	<b>Jan/ Feb 11</b>
<b>CD2 Approval</b>	<b>24 months</b>	<b>FY12-Q2</b>	<b>Jan/ Feb 12</b>
<b>CD3 Approval</b>	<b>36 months</b>	<b>FY13-Q2</b>	<b>Jan /Feb 13</b>
<b>CD4 Approval</b>		<b>FY17 Q1/2</b>	



# Hypothetical Funding Profile

	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	Total
CDR	\$5.4M	\$12M							\$17.4M
R&D	\$4.6M	\$5M	\$2M						\$11.6M
PED??									
Long Lead			\$15M						\$15M
TEC/MIE/ Construction			\$30M	\$70M	\$95M	\$54M	\$45M	\$12M	\$306M
Total	\$10M	\$17M	\$47M	\$70M	\$95M	\$54M	\$45M	\$12M	\$350M



# Pacesetter: David Gagliano (XSD)

For the consistently high-quality of technical support provided to the 4-ID and 6-ID beamlines and, in particular, for the extra effort to ensure the success of the pulsed magnetic field and electrostatic levitation experiments.



## Pacesetter: Isaac Vasserman (ASD) and Joseph Xu (AES)

For improvements and enhancements to the insertion device magnetic measurement system at APS. This led to a measurement system that will meet the more demanding requirements of future beamlines and an enhanced light source.





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