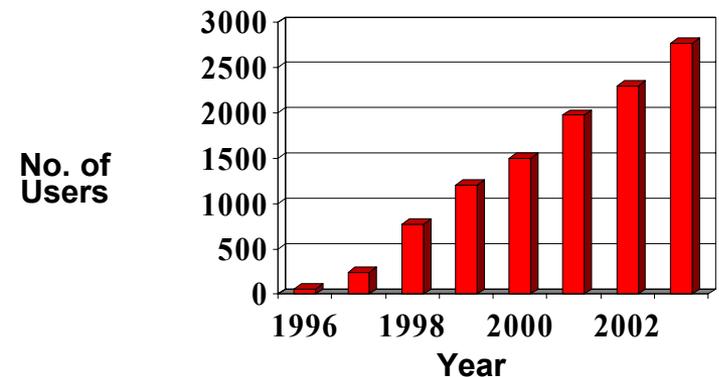




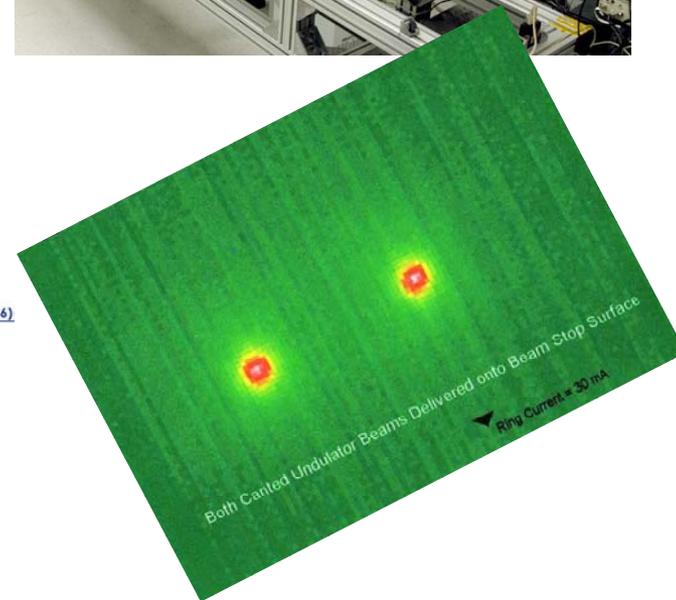
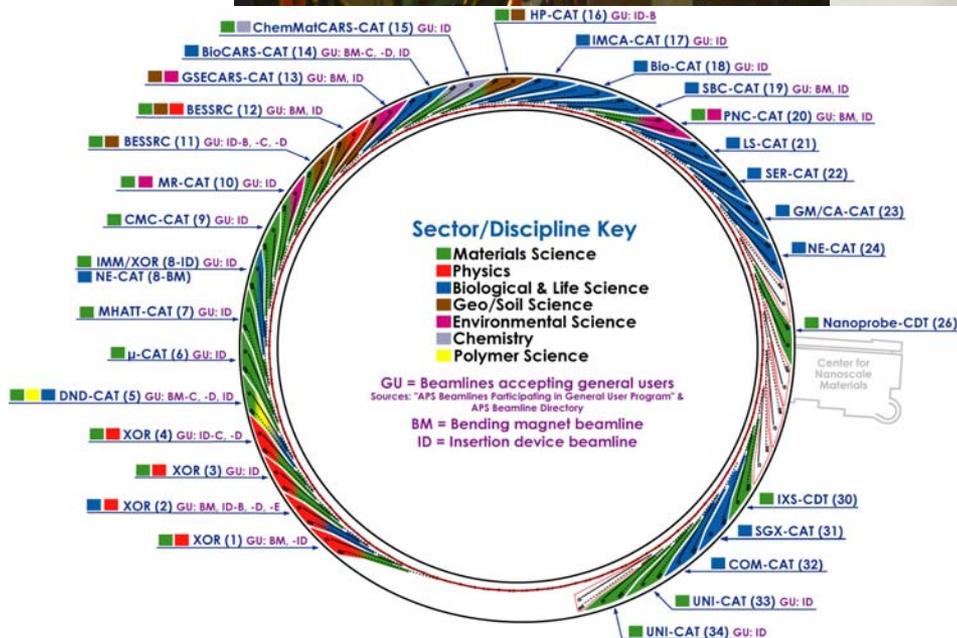
The State of the APS

Employee Update 2/20/04

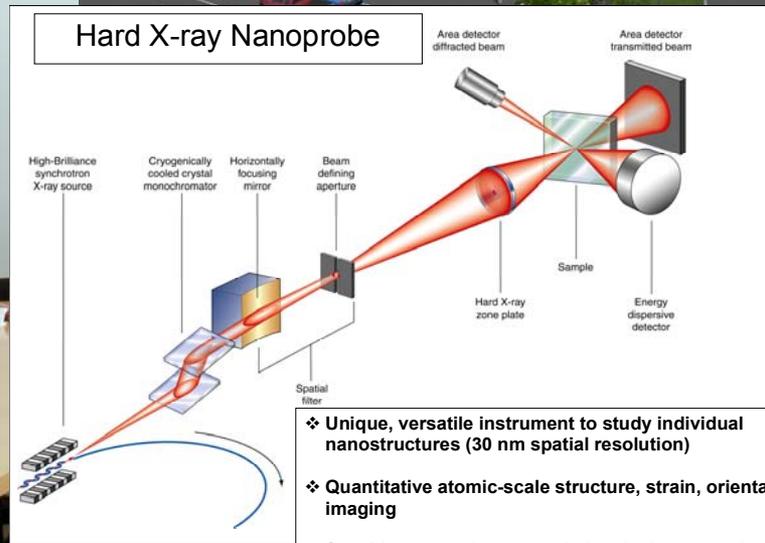
J. Murray Gibson
Associate Laboratory Director



New Sectors



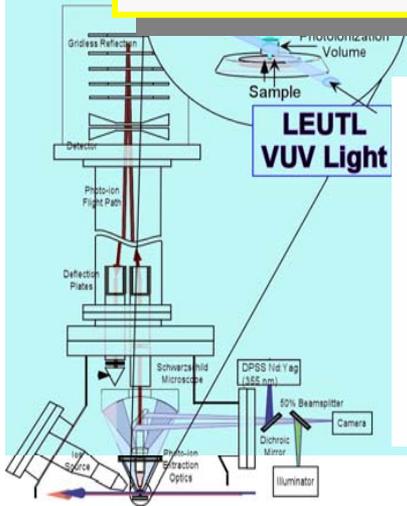
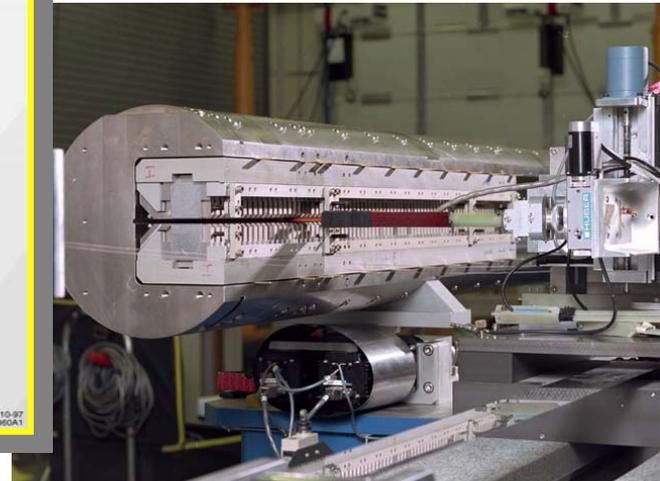
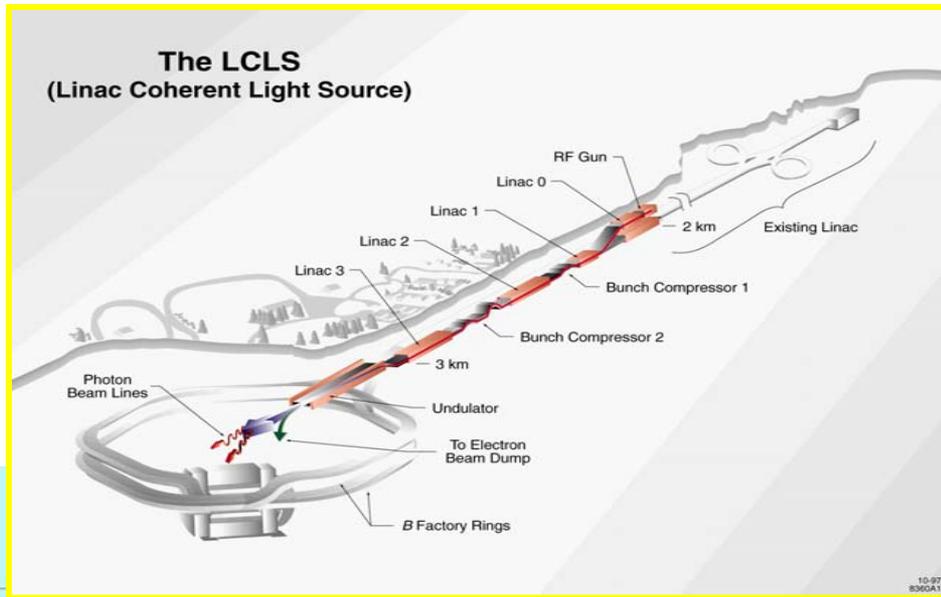
Center for Nanoscale Materials



- ❖ Unique, versatile instrument to study individual nanostructures (30 nm spatial resolution)
- ❖ Quantitative atomic-scale structure, strain, orientation imaging
- ❖ Sensitive trace element and chemical state analysis
- ❖ Ability to penetrate overlayers, environments, fields

4th Generation Light Sources

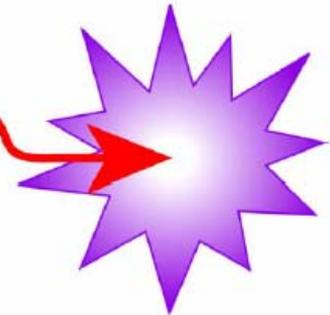
LCLS



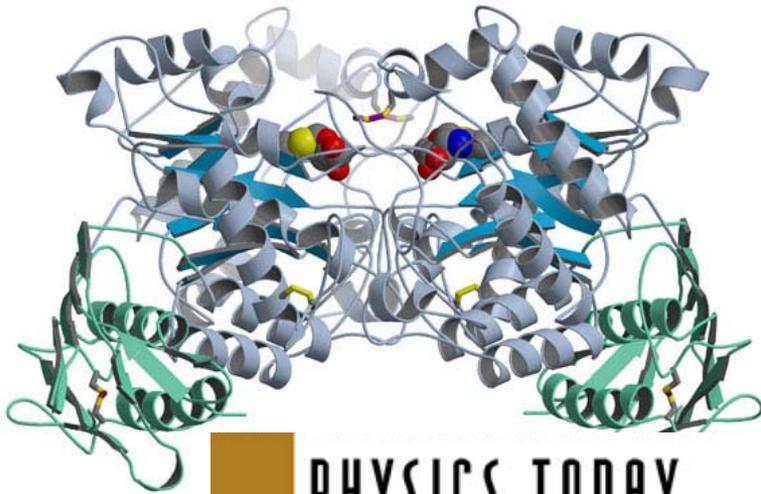
**Workshop for Users of the Proposed
Argonne Linear Free-Electron Laser Facility (ALFF)**

October 30-31, 2003

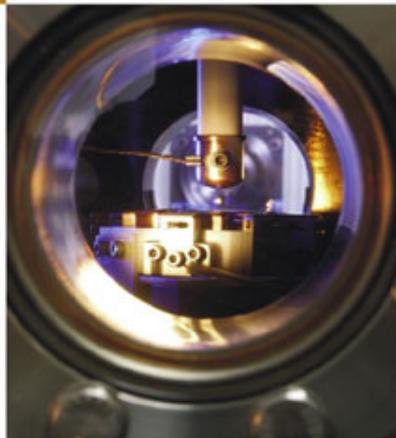
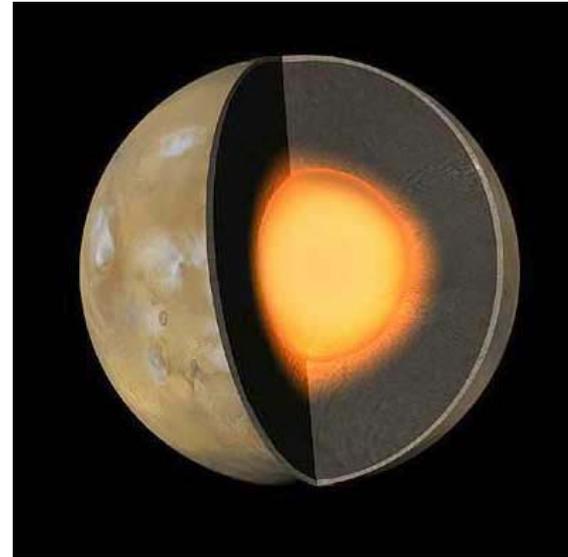
Argonne National Laboratory, Argonne, Illinois U.S.A.



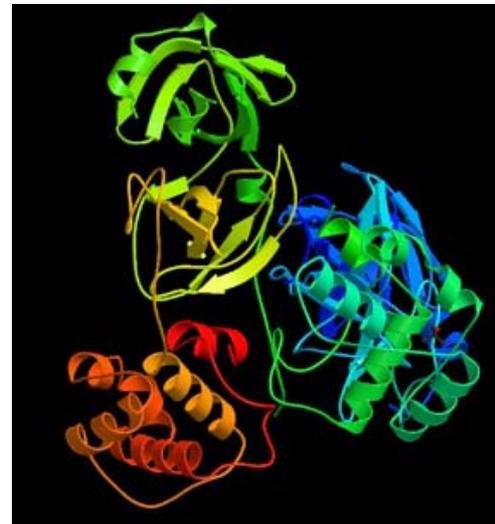
New Science



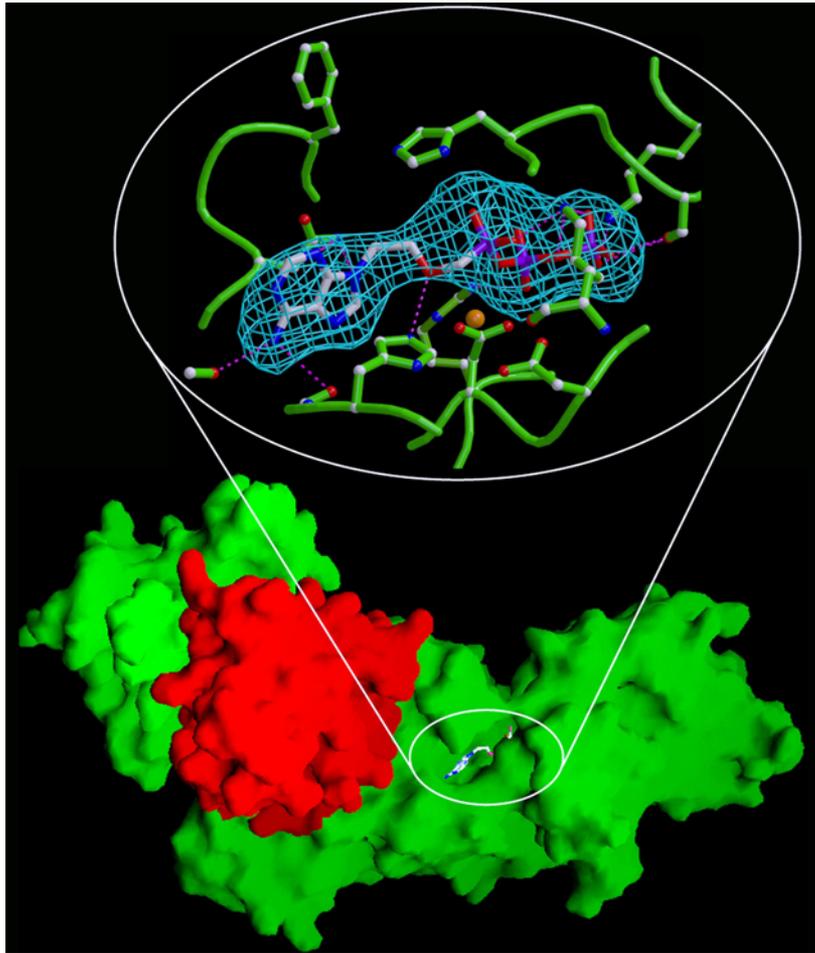
JULY 2003
PHYSICS TODAY



Targeting molten metals



APS Studies Show that Hepatitis B Drug Also Blocks Anthrax Toxin



U. of C. and Gilead Sciences, Inc., researchers using SBC 19-ID beamline find that drug approved in 2002 for treatment of chronic hepatitis B (adefovir dipivoxil) can block action of anthrax edema factor toxin

Earlier APS-based study of edema factor ("Structural basis for the activation of anthrax adenylyl cyclase exotoxin by calmodulin," by C.L. Drum et al., Nature 415, 396-402 [2002]) seen by adefovir dipivoxil researcher - collaboration resulted in these new findings

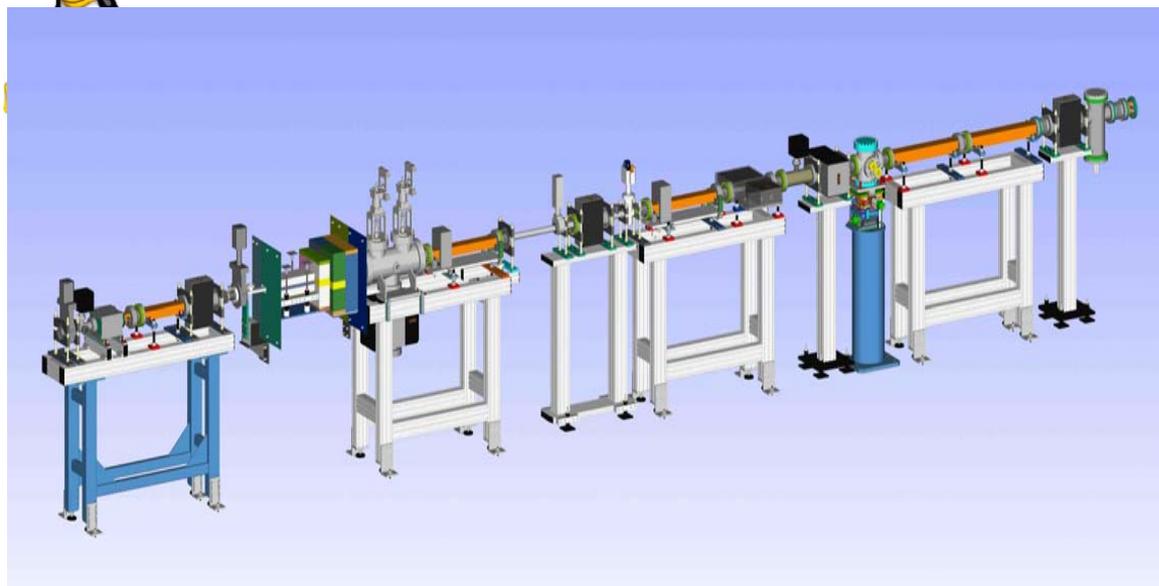
Structural analyses of interactions of anti-Hepatitis B drug adefovir dipivoxil with edema factor.

Y. Shen et al., PNAS Early Edition

New Technology



RTEMS





Rod Gerig
Accel. Syst. Div. Dir.

Geoff Pile
RF Group Leader
Accel. Syst. Div.

Michael Donell
Senior Tech., RF Group
Accel. Syst. Div.

J. Murray Gibson
Assoc. Lab. Dir., APS

Pacesetters!!



External Recognition

Particle Accelerator Science and Technology Award to Steve Milton



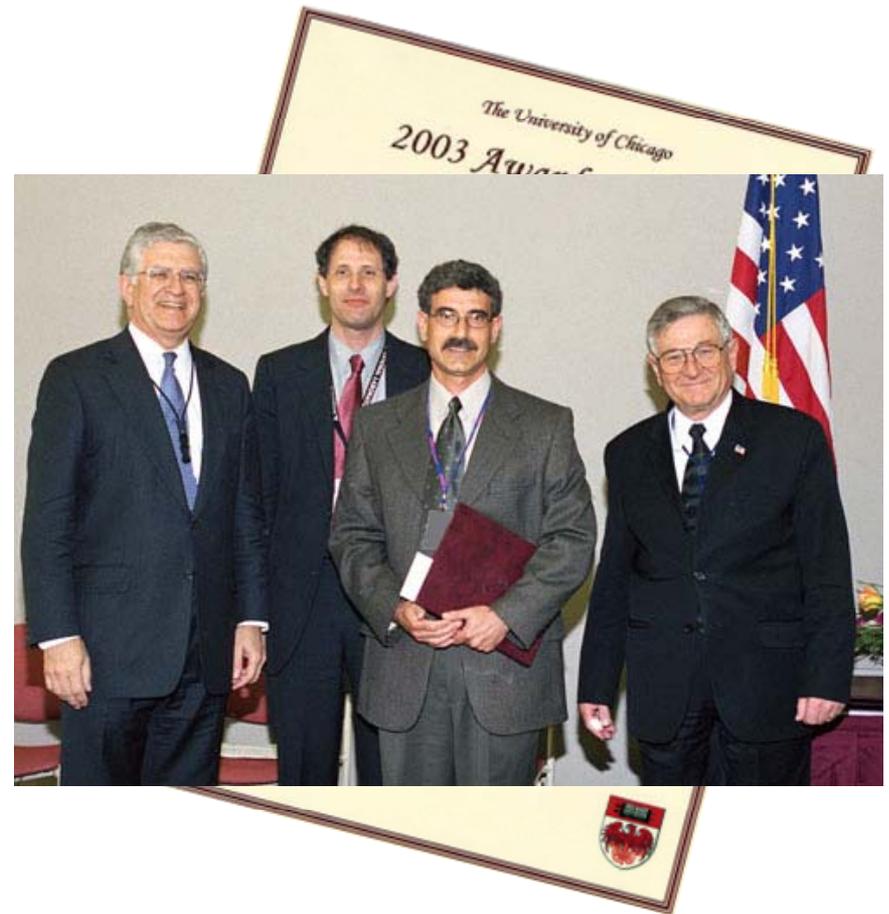
APSUO to give Rosalind Franklin Award at Users Meeting in May



Amy Rosenzweig – APS User receives MacArthur “Genius” Fellowship



**ASD's Kim Appointed
710 Level Senior
Scientist**



George Srajer (second from right) receives his U. of C. Distinguished Performance Award from (left to right) D. Randel, President, U. of C.; T. Rosenbaum, U. of C V.P. for Research and ANL; and H. Grunder, Director, ANL.

FY03 Promotions

AOD

	From	To
Davis, K.	106	108
O'Malley, D.	106	108
Vigliocco- Hagen, M.	104	108
Hill, A.	Technician III	Sr. Tech
Hlavacik, J.	606	607
Strasser, S.	606	607
Wood, M.	606	607
Klimara, A.	108	703ne
Gades, L.	703	704
Chang, E.	704	705
Jones, S.	703ne	705
Potempa, S.	704	705
Banks, G.	705	706
Berg, B.	705	706
Pasky, S.	705	706
Davey, S.	706	707
Lill, R.	706	707
Sereno, N.	706	707
Sidorowicz, K.	706	707
Emery, L.	707	708
Maclean, J.	706	708
Mooney, T.	707	708

ASD

	From	To
Smith, O.	Design Drafter	Associate Designer
Benes, S.	Sr. Tech.	Chief Tech I
Aguirre, P.	Technician III	Sr. Tech
Sarne, C.	Technician III	Sr. Tech
Theres, E.	702ne	703ne
Hanuska, S.	703	704
Nguyen, H.	703	704
Bromberek, D.	704	705
Dimonte, N.	704	705
Morrison, L.	704	705
Putnam, R.	704	705
Varotto, M.	704	705
Penicka, S.	706	706
Harkay, K.	706	707
Lewellen, J.	706	707
Kraimer, M.	707	708
Lenkszus, F.	708	709
White, M.	708	709
Kim, K-J	709	710
Carwardine, J.	708	801

FY03 Promotions (cont'd)

XFD	From	To
Cowan, J.	110	603
Merritt, M.	702ne	703ne
Doose, C.	704	705
Khachatryan, R.	704	705
DeCarlo, F.	705	706
Erdmann, M.	705	706
Freeland, J.	705	706
Toellner, T.	705	706
Grimmer, J.	706	707
Khounsary, A.	706	707
Lai, B.	706	707
Sturhan, W.	706	707
Wang, J.	706	707
Macrander, A.	707	708
Alp, E.	708	709
Shu, D.	708	709

APS-PA	From	To
Nowotarski, M.	(New Hire)	110
Fenner, R.	605	606
Ruzicka, W.	(New Hire)	803

In 2003 we promoted 62 people

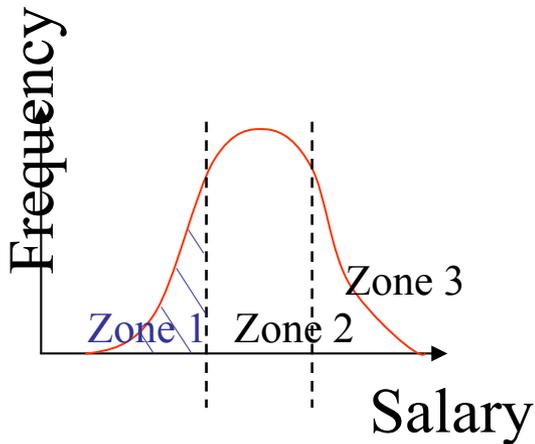
Improved transparency in promo/merit
Guidelines on promotion on web site

Merit Adjustments for 2004

Argonne Philosophy – Pay for Performance..

- 2003 Performance Appraisal ~29% distinguished (out of 303)
- 2004 Merit Pool for 2004 is 3.0% for Raise; ~1.9% Bonus

2003 APS Data on Averages



	SALARY ZONE		
PERFORMANCE	Zone 1	Zone 2	Zone 3
Distinguished	5.3	4.0	3.3
Commendable	3.3	2.3	1.7
Needs Improvement	0	0	0

- Promotion/Adjustment pool was only 0.8% this year (compared with more than 1.5% last year); Set aside small part (~0.2%) of merit pool for adjustments.
 - 2004 distribution data will be released in March

Good communication is essential

- **APS Employee Advisory Committee**

Janet Anderson (ASD)

Yeldez Amer (AOD)

Lahsen Assoufid (XFD)

Christa Benson (XFD)

Linda Devito (AOD)

John Lewellen (ASD)

David Meyer (ASD)

Ziyong Zhao (XFD)



- **Employee Survey**

Suggestion Box

APS Improvement Suggestion and Concern Page



Ways to submit an improvement suggestion:

1. Submit suggestions via web (see form to the right).
2. Contact a member of the APS Employee Advisory Committee:
[AMER, YELDEZ - AOD](#)
[ANDERSON, JANET - ASD](#)
[ASSOUFID, LAHSEN - XFD](#)
[BENSON, CHRISTA - XFD](#)
[DEVITO, LINDA - AOD](#)
[LEWELLEN, JOHN - ASD](#)
[MEYER, DAVID - ASD](#)
[ZHAO, JIYONG - XFD](#)
3. Envelopes located near Bldg. 401 elevators, and outside the floor coordinator's office, can be used to send suggestions directly to Murray Gibson, APS Associate Lab Director.

Enter a suggestion:

Note: There is no tracer on this page to indicate where the suggestion came from.

Optional: If you want a personal response, please enter the following:

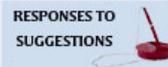
Name:

Email:

Phone:

Division:

Address:



APS Annual Goals for FY 03

How Did We Do?

- **Increase the scientific output of users**
 - Implement a centralized general user program
 - Provide more support to resident users and CATs
 - Operate BES beamlines where required
 - Improve web pages for general user accessibility
 - Establish periodic high-quality publications for outreach
- **Increase the impact of science from APS**
 - Implement a Scientific Advisory Committee and sector review panels
 - Optimize beam-time allocation and use
 - Encourage and support development of specialized beamlines
 - Foster theory activities at APS
- **Deliver high reliability**
 - Ensure availability exceeds 95%
 - Increase the MTBF to at least 35 hours
 - Improve the reliability of beamlines
 - Plan for age and damage-related obsolescence

Science Advisory Committee

- *“We have been very pleased with the revamping of the SAC, the SAC-commissioned study on the assignment for the four remaining sectors, as well as their new annual cross-cutting review of science in particular areas, and the three-year sector-by-sector reviews.” - UC Review Committee*



SAC Cross-Cutting Review on “Science with Microbeams,” January 21, 2004

APS Annual Goals for FY 03

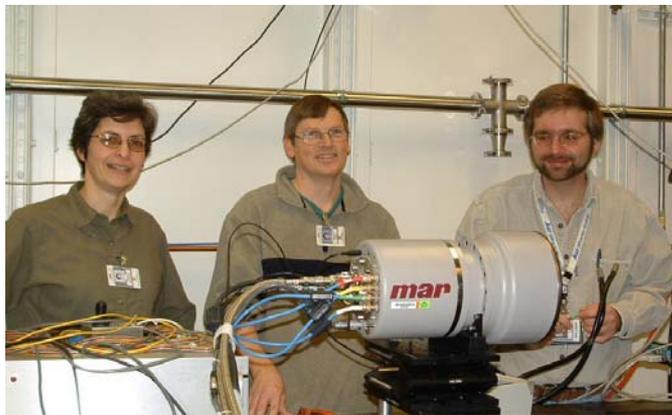
- **Innovate instrumentation for improved user science**
 - Improve accelerator performance from user perspective
 - Develop new insertion devices for innovative science
 - Improve and innovate beamline performance
- **Improve the efficiency and effectiveness of the APS**
 - Improve the partnership with CATs and users
 - Implement a graded approach to document management
 - Facilitate effective and seamless interactions between APS divisions with clearly-defined interfaces and responsibilities
 - Improve communication within the APS and user community
 - Foster excellent supervision
 - Employ a graded approach to project management
 - Improve partnerships with Argonne and the University of Chicago
 - Improve workplace diversity and working conditions

APS Annual Goals for FY 03

- **Support Laboratory-wide initiatives**
 - Facilitate the Center for Nanoscale Materials and the x-ray Nanoprobe
 - Support Lab-wide coordination of accelerator physics activities
- **Foster a safe and secure environment**
 - Provide support and oversight for user safety and security issues
 - Improve the safety oversight integration across APS divisions and improve the safety and security of APS employees
- **Invest in the future**
 - Support Linac Coherent Light Source (LCLS) and associated experimental program
 - Recruit outstanding users and staff
 - Increase the number of graduate students and foster training in beamline research
 - Contribute to the development of future light sources and the broader scientific community

Enhanced User Support

- Detector pool
- Beamline controls
- Computing
- Database management
- Mechanical and electrical engineering
- User program administration
- Environment, safety, and health



“The accelerator performance is outstanding”

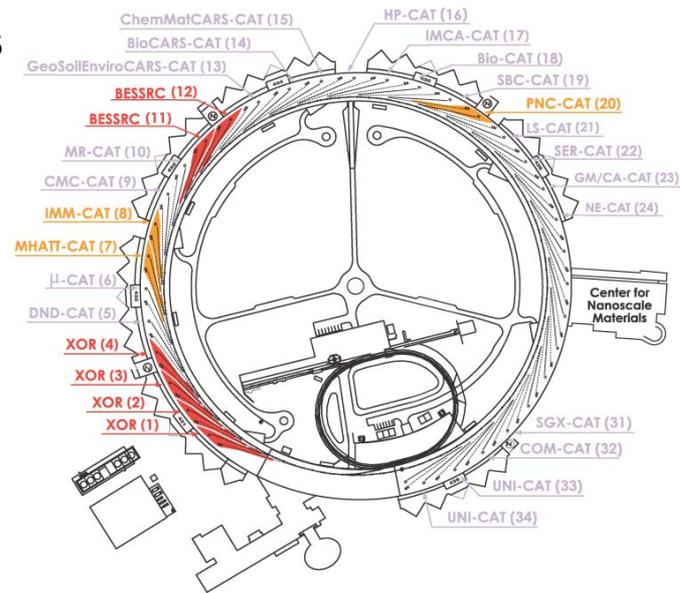
UC Review Committee



Beamline scientists and engineers are on the frontline of research and operations



X-Ray Operations and Research is growing – 18 new beamline staff since 2001; expect to hire 8 more this year...



plus new sectors, IXS(30), Nano(26) and Powder Diffraction(12BM)



APS Goals in 2004

- **Increase the output and impact of user science**
 - Expand the size, scientific scope and national character of our user base
 - Provide advice and support for general users
 - Enhance support to sectors
 - Increase productivity of BES beamlines
 - Perform cross-cutting reviews
 - Encourage and support development of specialized beamlines
 - Foster theory activities
- **Deliver high reliability**
 - Ensure availability exceeds 95%
 - Maintain the MTBF at 40 hours or better
 - Improve the reliability of beamlines
 - Plan for age and damage-related obsolescence
- **Innovate instrumentation for improved user science**
 - Improve accelerator performance
 - Develop new insertion devices and front ends
 - Improve and innovate beamline performance
 - Improve optics and detector performance

APS Goals in 2004

- **Improve the efficiency and effectiveness of the APS**
 - Implement a graded approach to document management
 - Strengthen interactions and resolve interfaces between APS divisions and groups
 - Employ a graded approach to project management
 - Ensure timely delivery on commitments to sectors
 - Strengthen partnerships with organizations outside APS
 - Provide appropriate training and recognition to supervisors
 - Begin 360 degree feedback process for supervisors
 - Improve workplace diversity and working conditions
- **Support laboratory-wide and DOE initiatives**
 - Facilitate the Center for Nanoscale Materials and the x-ray Nanoprobe
 - Fulfill our commitments to the Linac Coherent Light Source (LCLS)
 - Support lab-wide accelerator physics activities

APS Goals in 2004

- **Foster a safe and secure environment**
 - Take ownership of all critical components in the x-ray beam path
 - Improve procedures for evaluation of new critical component designs
- **Invest in the future**
 - Develop a time-resolved experimental program
 - Recruit outstanding users and staff
 - Increase the number of graduate students and postdocs
 - Foster training in beamline and accelerator research
 - Contribute to the development of future light sources and to the broader scientific community

Integrated Content Management System (ICMS)

Documents/Drawings

- One stop searching and retrieval of all content
- Content viewable via a browser
- Document creation and storage is simple and can be performed from within your favorite Microsoft Office application
- Versioning of all documents
- Embedded records management meeting DOE requirements
- Documents integrated with customizable workflows

Web Content

- Easy publishing to the web allowing document creators to focus on content, not presentation
- Consistent look and feel for all APS web pages
- Entire websites can be versioned

Marcia Wood leads information systems group to secure an ICMS system this year and implement in a graded approach



Safety - we must remain vigilant



ARGONNE NEWS

Pioneering Science and Technology ■ Monday, December 15, 2003 ■ Volume 56, Number 48



ASD's Barsz wins Quality and Safety Award

By Dave Jacqué

Literally "going the extra step" for safety resulted in Argonne-East's first Quality and Safety Recognition (QASR) Award for Tom Barsz (ASD). On a lunch-hour walk, the quality assurance representative identified and reported counterfeit bolts on a piece of lifting equipment, potentially avoiding a dangerous and expensive hazard.

"Safety is vital to the laboratory's ability to conduct research and development on behalf of the nation, and that safety depends on the efforts of conscientious employees who find, report and fix potential hazards," said Argonne Director Hermann Grunder.



SAFETY AWARD — Tom Barsz (ASD), center, receives the Argonne Quality and Safety Recognition Award from laboratory director Hermann Grunder (left). At right is Adam Cohen, assistant laboratory director for Integrated Safety Management.
Photo by George Joch.

Photo Source (APS).

believe it."

Barsz immediately "tagged out" the spreading bar and reported the situation to APS Management.

For his efforts, Barsz was presented with the Quality and Safety Recognition Award at the Management Council meeting Dec. 2. He received a certificate of appreciation and lunch for two at his choice of the Argonne Guest House or the Building 213 Cafeteria. His name will appear on a plaque honoring all QASR Award winners.

"It was about paying attention to details and being willing to go the extra step," Barsz said. "You can't wait for things to go wrong. If someone had gotten hurt, what would I tell their family?"

Tom Barsz (ASD-QA) Earns First ANL Quality and Safety Recognition Award

Taking Care of Business



Safety and quality review is a very important part of our jobs –
We need *innovation*, and a counter-balancing *conservativism*.

We need reliable documentation.

Teamwork...



APS Diversity Committee

Julie Alderman (AOD)



Joann Brown (XFD)



Kathy Harkay (ASD) – Chair



Leonard Morrison (ASD)



Nena Moonier (AOD)



Liz Moog (XFD)



Rod Salazar (AOD)

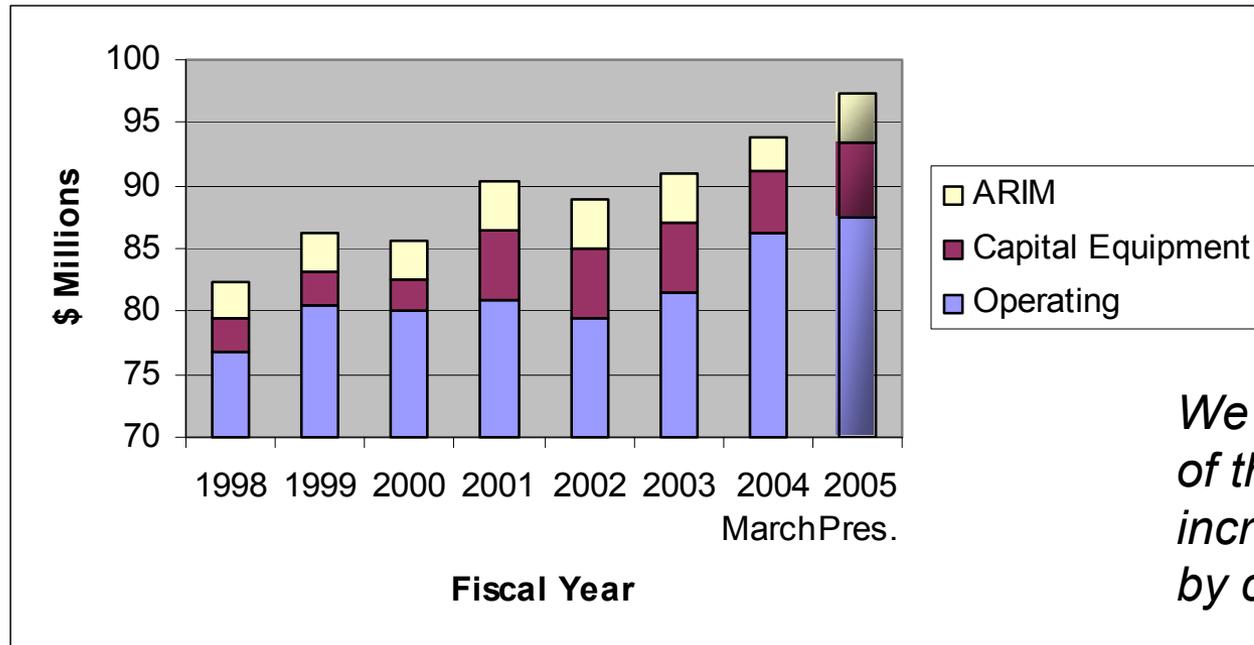


Greg Wiemerslage (XFD)



Building a working environment where everyone can contribute equally

Budget Update



Facility BES operating budget in March, \$86.23M, will be up \$4.7M from last year (5.7%).

But ARIM only \$2.6M, missing \$1.3M

Other income in FY '04, incl. LCLS, CNM, proprietary fees and LDRD is ~\$5M

Budget Planning for 2004

- Almost completed
- Identified sustainable division core budgets
- Expect growth even in trying budget times, but responsibilities are increasing also
- Continue to make the case for major enhancements to budget for beamline construction, operation and accelerator innovation (strategic plan)

Partial List of Major Approved Projects by Priority

- Priority 1:

- LCLS
- CNM Nanoprobe

New Regular Employee Hiring:
10 XFD
5 AOD

- IXS Sector
- Powder Diffraction Sector 11BM
- ICMS System

- Priority 2:

- PSS Gen 3
- Detector Pool Upgrades
- Superconducting Undulator Development
- SmCo undulator development

Final list will be made public very soon...

Strategic Planning:

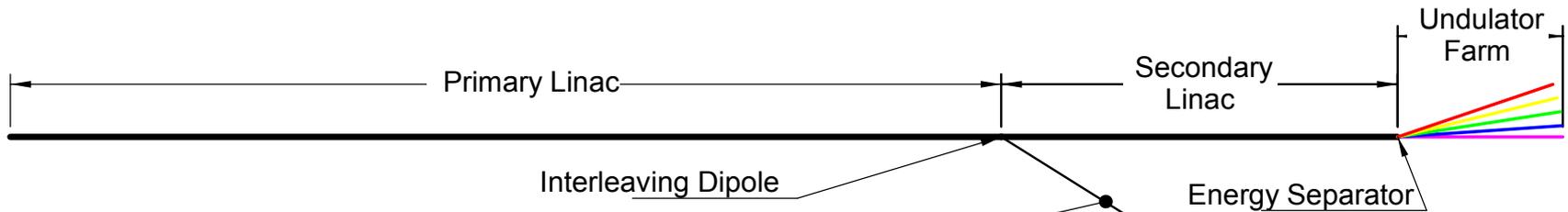
State-of-the-Art 3rd-Generation Science in 20 Years?

From the 20-year Upgrade Plan:

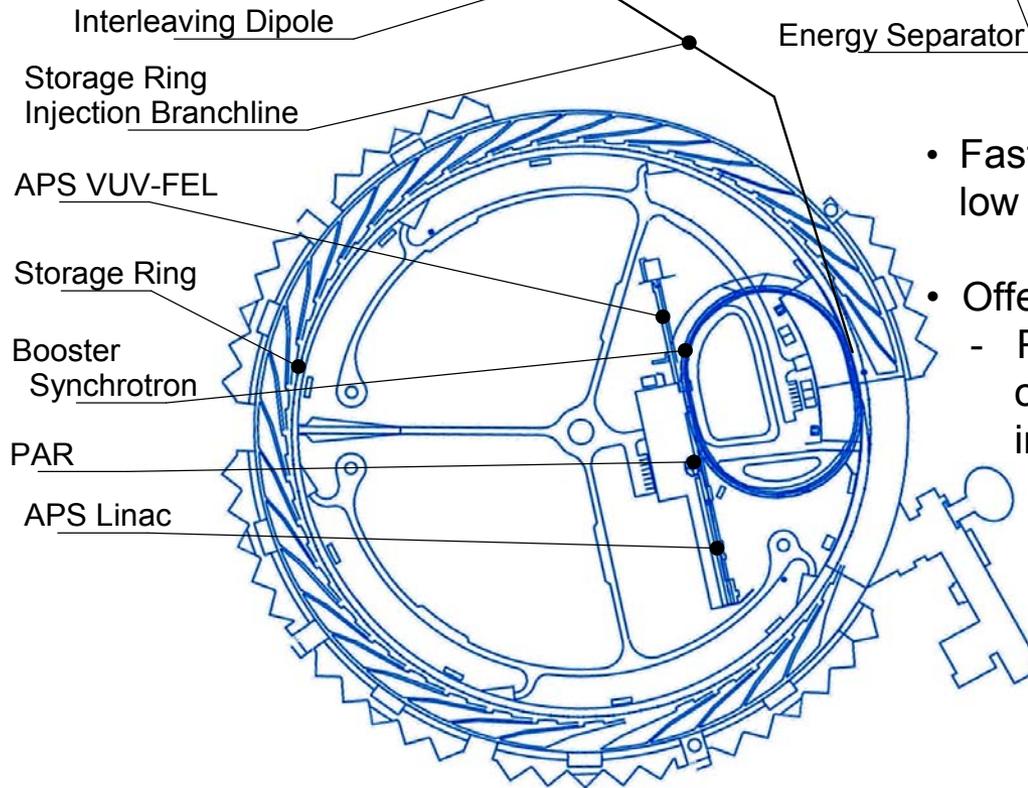
- *Individual nanoscale objects can be observed in real time.*
- *Electronic, dynamic, and magnetic properties of a single nanostructure can be measured.*
- *A few atoms can be chemically identified.*
- *A full dataset for protein structure analysis can be collected in less than a second.*
- *X-ray imaging of objects with nm resolution is routine.*

Leads to a phased plan to upgrade APS effective performance by 3-4 orders of magnitude.

PHASE IV – APS² – LINAC Augmented Light Source



APS LALS Concept Parameter List	
Length	~ 1 km
Beam energy	7 GeV to SR, 4 – 10 GeV at undulator farm
Charge / bunch	1 nC
Bunches per macropulse	1 – 1000
Macropulse rate	100 Hz
Average beam power	~ 1 MW at 1k bunches/macropulse
RF structures	Superconducting 1.3 GHz TESLA-type
Recirculation?	Possible; not required for low beam power operation



- Fast injection, low emittance
- Offers 4th gen. - Plus new use of existing injector (UV,IR)

One possibility...

BESAC Report: Advanced Photon Source

- *One of the world's premier hard x-ray sources*
- *Phase I & II – upgrades that are essential to optimizing scientific output and maintaining international competitiveness*
- *Phase III & IV – implementation of a “super storage ring” and advanced instrumentation*

- **Strongly support upgrade of facility beamline and source optimization (Phase I and II).**
- **Support long-term development of III and IV.**

2004 Strategic Planning Meeting

- Will hold on Aug. 29–Sept. 3, 2004 at Lake Geneva, Wisconsin with ~200 participants
- Will focus entirely on “New Scientific Directions for the APS”
 - Study by Gopal Shenoy and Sunil Sinha will include workshops
- 3 days of parallel workshops, 2-day summary discussion
- Aimed at fleshing out Phases I and II of the strategic plan



APS² Is on the DOE-SC Roadmap

U.S. Department of Energy

	Priority	Program	Facility
	1	FES	ITER
	2	ASCR	UltraScale Scientific Computing Capability
Near-Term	Tie for 3	HEP	Joint Dark Energy Mission
		BES	Linac Coherent Light Source
		BER	Protein Production and Tags
	Tie for 7	NP	Rare Isotope Accelerator
		BER	Characterization and Imaging
		NP	CEBAF Upgrade
		ASCR	ESnet Upgrade
	ASCR	NERSC Upgrade	
	BES	Transmission Electron Achromatic Microscope	
	12	HEP	BTeV
	13	HEP	Linear Collider
Mid-Term	Tie for 14	BER	Analysis and Modeling of Cellular Systems
		BES	SNS 2-4 MW Upgrade
		BES	SNS Second Target Station
		BER	Whole Proteome Analysis
Tie for 18	NP/HEP	Double Beta Decay Underground Detector	
	FES	Next-Step Spherical Torus	
	NP	RHIC II	
Far-Term	Tie for 21	BES	National Synchrotron Light Source Upgrade
		HEP	Super Neutrino Beam
	Tie for 23	BES	Advanced Light Source Upgrade
		BES	Advanced Photon Source Upgrade
		NP	eRHIC
		FES	Fusion Energy Contingency
		BES	HFIR Second Cold Source and Guide Hall
FES	Integrated Beam Experiment		

Priority: Tie for 23 Advanced Photon Source (APS) Upgrade



The APS upgrade will greatly enhance the brilliance and power of the facility to enable scientists to study very small sample crystals—important for nanoscience research.

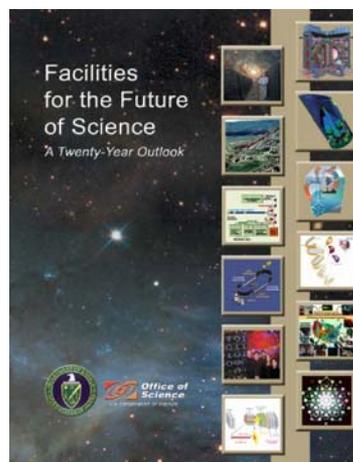
The Facility: The Advanced Photon Source (APS) upgrade will create a “super storage ring” of electrons that will greatly enhance the brilliance of the facility, increasing the power of the device and enabling scientists to work on very small sample crystals. Small samples are important: many current experiments are limited by the fact that the subject materials will not grow into large enough crystals for study.

Background: The APS at Argonne National Laboratory was commissioned in 1996. It currently provides the brightest x-ray beams available in the Western Hemisphere for a wide range of research from materials science to structural biology. The 1,104-meter circumference storage ring of the APS, which is large enough to house a baseball park in its center, produces, accelerates, and stores a beam of

subatomic particles that is the source of the x-ray beams that feed numerous experimental stations. The APS will support more than 4000 users on 70 beamlines.

What's New: This eventual APS upgrade will replace and upgrade major components of the accelerator to further increase performance in the hard x-ray region of the spectrum, most notably x-ray photon correlation spectroscopy, coherent imaging, inelastic scattering, and x-ray nanoprobes. The upgrade will be necessary to keep the APS among the best of the hard x-ray facilities, and ensure that its performance and scientific output continue to be ground-breaking.

Applications: Using high-brilliance x-ray beams from the APS, members of the international synchrotron-radiation research community have achieved major advances in basic and applied research in the fields of materials science; biological science; physics; chemistry; environmental, geophysical, and planetary science; archeology; and innovative x-ray instrumentation.



Facilities for the Future of Science available from

http://www.science.doe.gov/Sub/Facilities_for_future/20-Year-Outlook-screen.pdf

Advanced Photon Source (APS) Upgrade (from DOE Report)

- **The Facility:** The Advanced Photon Source (APS) upgrade will create a “**super storage ring**” of electrons that will greatly enhance the brilliance of the facility, increasing the power of the device and enabling scientists to work on very small sample crystals. Small samples are important: many current experiments are limited by the fact that the subject materials will not grow into large enough crystals for study.
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APS²

Denny Mills and Kwang-Je Kim to lead strategic planning on APS²

Argonne Community

- New Regional Biocontainment Laboratory
 - and plans for protein production facility (DOE Genomes to Life)
- Strategic emphasis on accelerators
 - APS, RIA, HEP...
- Science and research facilities rated outstanding by the Office of Science
- Contract recompetition September 2006

APS and the Outside Community

