Goals of Today's Workshop

- To hear about promising detector areas and how they are developing.
- What limitations are there with current ALS experiments.
- What experiments would you like to do that cannot be done with present detectors.
- Will take input back to National Workshop in Washington to incorporate in workshop report.

Why is Detector Roadmap Needed?

- Experiments are becoming more difficult since easy first generation experiments have been done.

- Operation of synchrotrons is outstanding. Beamline optics has improved significantly. Detector development has not kept pace.

- Developments in like multi-element detectors and pixel/IC electronics provide new opportunities.

- If developed these detectors could have a major impact on synchrotron experiments.

Purpose of National Workshop

To produce a collective vision of how to develop the next generation of detectors to solve critical experimental problems. To create a "Roadmap for Synchrotron Detector Development"

How Did the Workshop Develop?

- Howard Padmore suggested that we have a detector workshop at the ALS Users Meeting.

- I spoke to Peter Siddons about the workshop and he asked if Brookhaven could co-sponsor the workshop.

- We decided to ask if other synchrotrons would be interested. We received a positive response from all the U.S. synchrotrons. They all have a representative on the program committee.

- Pat Dehmer of DOE Science agreed to fund the workshop.

Program Committee Has Members From All U.S. Synchrotrons

Aladdin - Ralf Wehlitz

ALS - Al Thompson

APS - Denny Mills

CAMD - Josef Hormes

CHESS - Sol Gruner

NSLS - Peter Siddons

SSRL - John Arthur

Other members - Steve Naday (ANL)
Franco Manfredi (Univ. of Pavia)

National Workshop Format

- First Day talks by x-ray experimentalists and detector specialists.
- Second day work in working groups and write a proposed research plan for each area.
- Meet together to discuss contents of roadmap and workshop summary.
- Proceedings of workshop will be published in Journal of Synchrotron Radiation

Location and Attendees of Workshop

- In Washington on Oct.30/31 at the Marriott Hotel.
- Attendance is by invitation only (80 max).
- Attendees are expected to join a working group and participate in writing of report. This contribution is very important to the success of the workshop.

What experiments are detector limited ?

- Spectroscopy and Atomic Structure- Chuck Fadley
- Diffraction Techniques - Sean Brennan (SSRL)
- X-Ray Microscopy - Mark Rivers (Chicago)
- EXAFS - Steve Heald (PNCC Cat at APS)
- Fast Dynamics - Roger Falcone (UCB)

What Are Experimental Needs ?

- Fourth Generation Synchrotrons – John Arthur (SSRL)
- Infrared Research – Larry Carr (NSLS)
- Macromolecular Crystallography – Bob Sweet (BNL)
- X-Scattering and Fluorescence – Chi Chang Kao (NSLS)

Promising Detector Research Areas

- Overview of detector research areas - Rob Lewis (Daresbury)
- Gas detectors - Graham Smith (BNL)
- High energy resolution superconducting bolometer arrays
  - Kent Irwin - (NIST)
- CCD Detectors for Crystallography - Steve Naday (APS)

Special Session on Pixel Detectors

- Digital systems - Christian Bronnimann (Swiss Light Source)
- Analog systems - Sol Gruner (CHESS)
- Integrated systems - Jacques Millaud (LBNL)
- High Energy/Synchrotron Perspective - Eric Heijne (CERN)

Other Promising Detectors

- Multi-element Si(Li), Ge and CdTe detectors for EXAFS
  - Gareth Derbyshire
- Silicon drift detectors - Pavel Rehak (BNL)
- Avalanche photo diodes - Alfred Baron (Spring 8)
- Photoelectron and UV detectors - Ralf Menk (ELETTRA)
- Sub-picosecond streak cameras – Jean-Claude Kiefferr (INRS Univ Quebec)
- Avalanche photo diodes - Alfred Baron (Spring 8)