

IMB X-Ray Facility Overview

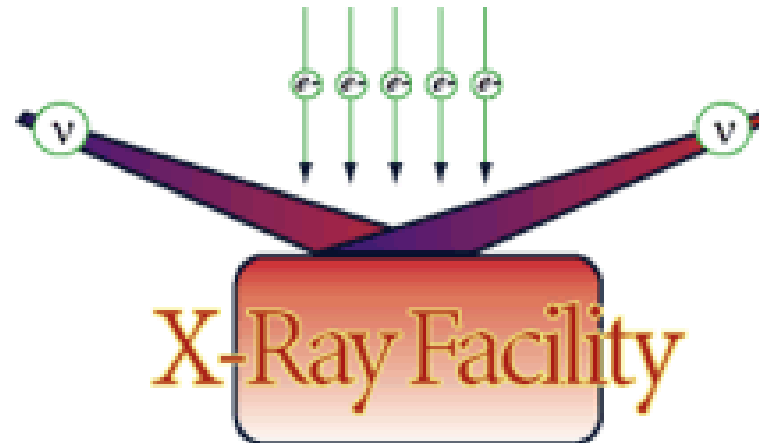
Institute of Molecular Biophysics

X-Ray Facility (XRF)

410-413 Kasha Laboratory

www.sb.fsu.edu/~xray

850-644-6448

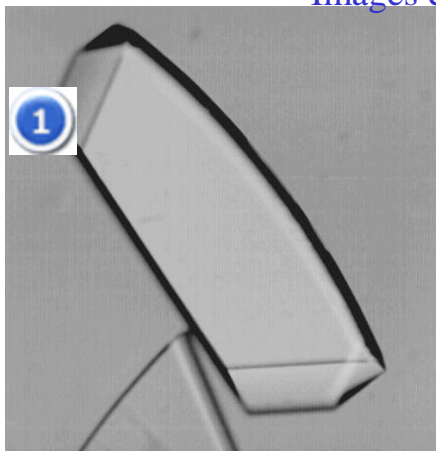


IMB MOB XRF

- IMB interdisciplinary Institute
- Home to MOB Prgm
- Chemistry, Biology, Physics, Mathematics, and Engineering
- Major research focus:
 - Structural Biology
 - Computational Biophysics
- X-Ray Facility was established in 1993
- One of the four Core Facilities in IMB
- Open Access to FSU and SUS Institutions
- Nominal fees for usage
- Safety & On-site Training Required

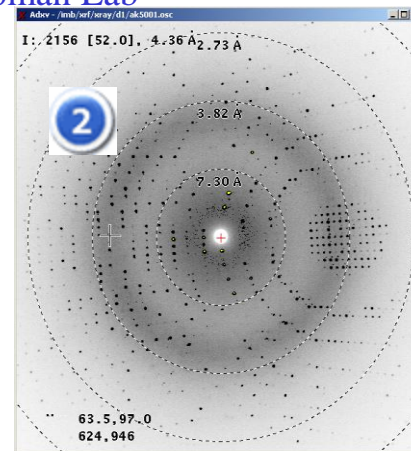
What XRF Can Do For You?

Images courtesy of Michael Chapman Lab



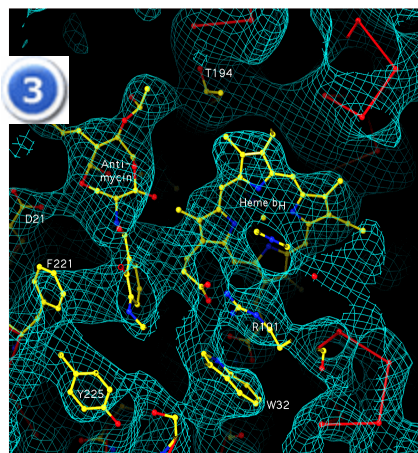
Crystal

Data
Collection



Diffraction

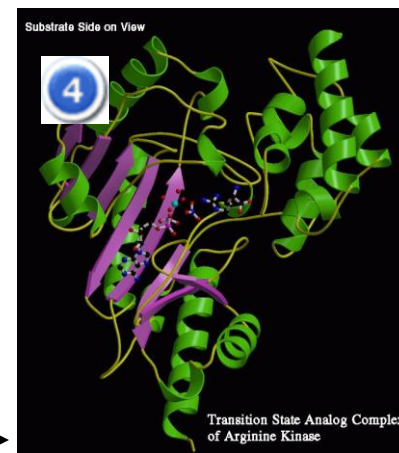
XRF can
help you
in Steps



e⁻ Density

Data
Processing

Atomic
Modeling



Structure

Service and Resources

Data Collection

- X-Ray Generator & Mirror System
- Digital Detector & Control

Data Processing

- Extract intensity and index
- Obtain phase information
- Refine and fit the data to model

Amenities

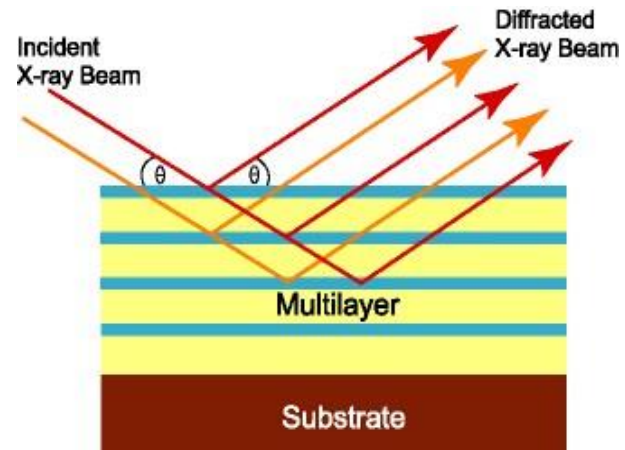
- Crystal Room
- Cold Room
- Digital Imaging
- Synchrotron Time

Resources

- Screening & Crystallization
- Data Collection Strategy
- Crystal Storage & Transport
- Synchrotron Time & Usage

X-Ray Generator & Mirror

- *Rigaku RU-H2R*
- Cu Rotating Anode
- Brilliant Beam
- Osmic Confocal Mirror
- Wavelength Purity
- High Flux



www.rigaku.com

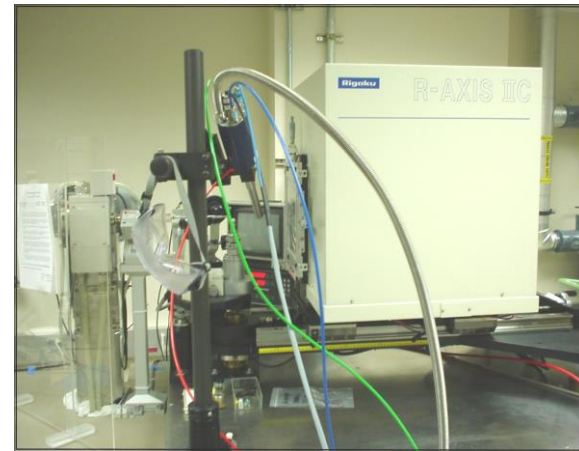
X-Ray Detectors

Imaging Plate

- *Rigaku R-Axis IIc*
- Two 19cm² IPs
- 8 minute Read-out

CCD

- *MarCCD165*
- Single CCD
- 3 s Read-out

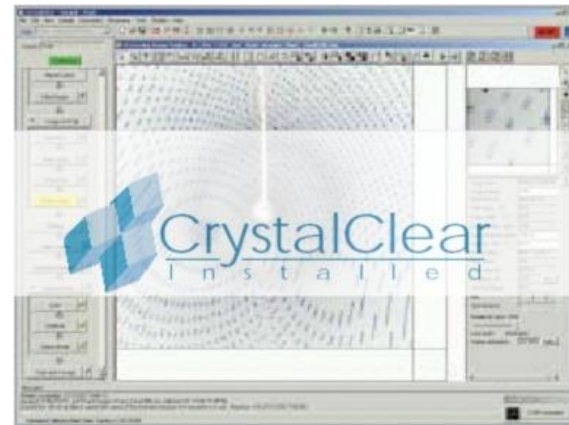


Computer and Software

- Linux and/or Windows O/S
- Software for machine control and collection
- Software for extracting intensity information
- Data storage and retrieval

X-Ray (Cryo) Data Collection

- *MarCCD/CrystalClear*
- GUI
- Automated
- Analog»Digital
- *Oxford CryoSystem*
- Collect at 100°K
- Protects Crystals
- Sharper eDensity



www.oxfordcryosystems.co.uk

CryoCrystallography

- Flash Cool in Stream
 - For Immediate Collection
 - Ease of Handling
- Flash Cool in Liquid
 - For Storage
 - For Shipping & Transport



Flash Cool in Stream



Flash Cool in Liquid

How to become a user?

- Contact the Director of IMB
- Preliminary trial (free)
 - Bring protein for crystallization screen or
 - Bring crystal for diffraction
- Establish an account with XRF
- Independent or collaborative work

XRF-Contact

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