

# A Brief Guide to Writing Synchrotron User Proposals for XAFS

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inspired by a talk by Matthew Newville  
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# General User Access to Synchrotrons

Beamlines tend to give at least 25% of the beamtime – often much more – for General Users, i.e. open access to any researcher:

- Beamtime allocated by peer-review and open competition.
- The process is designed to bring in new people, while keeping access open to all researchers.
- General User Beamtime can go to “local experts”
- Many beamlines give much more than 50% General User time

Synchrotron calendars include “run cycles” with specific deadlines for proposal submission. **Always check the synchrotron website for the submission calendar.**

Proposals are usually due around the middle of the preceding run.

## Example: XAFS Beamlines at the Advanced Photon Source in the U.S.

Beamline	% GUP	% XAFS	Notes
2-ID (XOR)	> 50%	1/4	x-ray microprobe, XANES
4-ID (XOR)	> 50%	1/2	XMCD, magnetic XAFS
5-BM (DNDCAT)	= 25%	1/2	catalysis, enviro
9-BM (XOR)	> 50%	all	can do S and Cl!
10-ID (MRCAT)	= 25%	most	Catalysis, enviro, actinides.
11-ID (XOR)	= 25%	some	time-resolved.
12-BM (XOR)	> 50%	most	Catalysis, enviro, actinides.
13-BM (GSECARS)	> 50%	1/4	geo / enviro
13-ID (GSECARS)	> 50%	1/4	x-ray microprobe, geo / enviro
18-ID (BioCAT)	= 25%	some	biological systems
20-BM (XOR/PNC)	> 50%	all	general purpose XAFS
20-ID (XOR/PNC)	> 50%	most	x-ray microprobe, geo / enviro, time-resolved.

**CAT** A beamline operated by an outside team

**XOR** A beamline operated by the APS

# Finding the right XAFS beamline

The IUCr XAFS Commission maintains a lovely compilation of the world's beamlines. (Thanks to Giuliana Aquilanti and Masao Tabuchi!)

(IUCr) Beamlines in Asia & Oceania - Mozilla Firefox

https://www.iucr.org/resources/commissions/xafs/beamlines-in-asia-and-oceania

International Union of  
**CRYSTALLOGRAPHY**

Home > resources > commissions > xafs > beamlines.asia-oceania

**Compendium of XAFS beamlines in Asia & Oceania**

This compendium of XAFS beamlines is maintained by the Commission on XAFS of the IUCr as a service to the scientific community. We list beamlines on which measurements of XAFS and related techniques, both in the soft and in the hard x-ray regions, are possible, the widest possible range of applications is considered. Both presently operating beamlines and those which are in the construction, commissioning or design phase are included.

See our list of [acronyms](#)

The data is listed to the best of our knowledge; most of it has been obtained from facility websites and in some cases it has been checked by members of the IUCr Commission on XAFS, staff scientists or expert users. Special thanks to Kiyotomi Nitta (Spring8) and Hiroyuki Asakura (Nagoya University).

We welcome corrections and updates, which should be sent to [Giuliana Aquilanti](#) and [Masao Tabuchi](#)

Operating facilities	Facilities under construction
AchiSR (Aichi, Japan)	
Aurora (Krasnoyarsk U. SR Center, KRS)	
Australian Synchrotron (Victoria, Australia)	SESAME (Amman, Jordan)
BSRF (Beijing, China)	
HISOR (Hiroshima, Japan)	
INDUS-2 (Indore, India)	
NSRF (Hefei, China)	
NSRRC (Hsinchu, Taiwan, ROC)	
PKI (Daejeon, Korea)	
Photon Factory (Tsukuba, Japan)	
SAGA (Ftoss, Japan)	
SLRI Siam (Nakhon, Thailand)	
SPRING-8 (Hyogo pref, Japan)	
SSLS (Singapore)	
SSRC (Novosibirsk, Russia)	
SSRF (Shanghai, China)	
UVSOR	

**Aichi Synchrotron Radiation Center**

**3 lists, sorted by region**

<https://www.iucr.org/resources/commissions/xafs>

# Proposal Contents

## The bottom line

Will this experiment result in a publication?

At most synchrotrons, the proposals are rated by panels of volunteers who may read as many as 20-30 proposals at a time. (The workload varies by synchrotron, but assume your reader is an over-worked volunteer **and** a peer.)

## Key Points for Successful Beamtime Proposals:

- 2-3 pages: **Take the time to make it short**
- Describe the importance of your science in terms **any** scientist can understand
- Aim broadly, proposals are read by physicists, chemists, biologists, etc....
- Describe your experiment well. Include details of samples to be measured and of experimental setup if non-standard. Account for the time you request and make clear that the time will be well-used.
- Consult with a beamline scientist and/or your collaborators before submitting proposal.

## More hints on proposal writing

- Describe the “Societal Impact” in the Abstract – reviewers love this.
- Describe other measurements that have been made on these samples.
- Be specific and explicit about:
  - Element(s) and edge(s) to be studied
  - Concentrations of elements to be studied.
  - Transmission, fluorescence, multi-element detector
- Give literature references. (**Don't** attach your CV. **Don't** attach PDFs of published papers.)
- Say you've taken this or a similar training class! (Really!)
- If you're a student or postdoc (most reviewers love this, too):
  - say so.
  - list yourself as Spokesperson, not your advisor.
  - write the proposal yourself, with help from advisor / senior students.
- If you've had some beamtime and “need a bit more time”, include a plot of any data collected so far.
- List a 2nd choice beamline.

# Proposal Scoring, Lifetime and Aging

**Proposal Scores** Many synchrotrons use a system of 1 (best) to 5 (worst) – like golf!

**Proposal Shifts** number of 8-hour shifts required for next run and for the lifetime of the proposal

- The synchrotron usually publishes the average Score for successful proposals
- Proposals that don't get time often "age up" as a reward for patience
- Proposals usually live for up to 2 years or until the allocated shifts are used
- To get beamtime in more than 1 run for a proposal, you will make a "Beamtime Request" for time in later cycles – **not a new proposal**
- To continue work, you can copy-and-paste an old proposal to start a "new" proposal

## Caution!

The aging systems at different synchrotrons work differently. Check each synchrotron's web site for details.

# After you've submitted a proposal

- Most beamlines are oversubscribed – many by 2× to 3×.  
oversubscription = (requested days) / (available days)
- It may take one or more run cycles to get beamtime.
- You may get less time than you ask for.



- **DON'T PANIC** – it will become easier.
- Once you are in the system, everyone involved wants you to succeed (i.e. publish!).
- Most of these hints work for getting beamtime at other facilities and for other techniques.