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Author:	Eric Dufresne
Type:	Other
Category:	Construction
Subject:	Pictures from the monochromator

Hi all,

I made a little web site for pictures I took from the monochromator on Friday and of the beamline today. Find it below:
http://www.mhatt.aps.anl.gov/operations/FY06/run2/shutdown/
I want to thank Xuefa Li for lending me his camera on Friday night at 1 am. I spent quite a bit of time looking for the camera.

It is also accessible from: http://www.mhatt.aps.anl.gov/operations/FY06/run2/ and linked to my operations web site http://www.mhatt.aps.anl.gov/operations/.

I spoke to Don Walko about something everyone should be aware of when using the monochromator. It is also possible to use the mono on the third harmonic of Si thus Si (333). The benefit should be higher resolution. Note that Si (111) has a Darwin width of 29 urad, while (333) is only 7.1 urad. The energy diffracted from the mono will be affected by the angular divergence of the incident white beam. Our typical divergence is about 500um/26.5m = 19urad. It turns out that 500um wide vertical white beam slit opening is about 2 sigma of the beam profile at 26.5m. So 19 urad will be about 2 sigma of the divergence. One should get better energy resolution and lower flux.

I never checked this in great details. Since the Bragg angle is larger when using 333 instead of 111, the energy range is more limited. My vague recollection of using the mono at such high angle is that one needs a lot of tweaking of pth to tune the second crystal. I never characterized the beam on Si (333). Note that the mono will no go above 41.5 degree.

Energy (keV) Bragg angle Si (333)
9.0 41.23 (so 9 keV is the lowest energy we could go on 333)
10 36.38
11 32.63
12 29.62
13 27.15
14 25.07

This might be of interest to some of our users who want higher resolution.

ED