

Meanwhile, back in the lab...

Source: <http://sci.tech-archive.net/Archive/sci.physics/2005-05/msg02492.html>

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 - *Date:* Thu, 19 May 2005 01:10:51 +0000 (UTC)
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In our last episode, a neutron guide at NIST broke from radiation damage, sending a chunk of glass through the magnesium window and destroying my monochrometer.

The guide had been fixed weeks ago, the monochrometer recently replaced and the shielding moved back in, allowing me access to that liquid nitrogen dewar that had been blocked in for a month. I've adjusted the rotation and tilt angles of the monochrometer to maximize flux, and now I'm trying to take a beam picture to see what it looks like.

We have a wonderful imaging plate that's loaded with lithium-6; expose it directly to the beam and read it out in the BAS-2000. So I built a jig to hold it, brought Health Physics in to check the setup, gave it a 30 second exposure, and brought it to Building 245 to read it. And found out the BAS-2000 had been broken for some time, and there's no plans to fix or replace it. So I tried reading it on the BAS-1800II, but that only accepts magnetic plates, and this one isn't magnetic.

Plan B was to use dysprosium foil, which activates in neutrons and emits betas with a half life of a few hours. Except our dysprosium foil is small, and I wanted a larger picture. And big peices of dysprosium are another one of those things you don't just buy at Staples.

Plan C is to activate a copper plate which we happened to have laying around. That has a smaller capture cross-section and the isotope of interest has a half-life of 13 hours, which translates to a whopping exposure to get something useful. The reactor was down Monday and Tuesday.

So I was ready to expose it today, after the talk by our guest speaker. But Health Physics had some concerns about the amount of radioactive material to be transported, and where it will be kept. And then they disappeared for a while. Turns out they were trying to figure out how many prompt gammas would be created. I don't think there'll be any, I got some ENDF data that seemed to say no prompt gammas until 100 keV, and my neutrons are little meV. And with hours to expose, wait out some short-lived products, and transfer to an imaging plate, it just got late. So we'll try it again tomorrow.

Meanwhile, back in the lab...

And science marches on. Sort of.

Nothing unusual, just another day in the lab.

—
"Tell me, Dr. Einstein, at what time does Boston arrive at this train?"
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