

Instrument Training Acknowledgement

I have received and read a copy of the Facility instrument training guidelines. yes no

I agree to exercise great care in changing samples and tuning probes so as to minimize the risk of damaging the instruments. yes no

I agree not to exceed safe power levels or duty cycles on the instruments. yes no

I agree not to run any experiments I have not received training for. I will only be considered trained to run certain experiments once both I and Facility personnel have initialled and dated them below for each type of instrument. yes no

| I have been trained to set up and run the following experiments | <u>Bruker</u> | <u>Varian</u> |
|---|---------------|---------------|
| Basic 1D proton spectra | _____ | _____ |
| ¹ H- ¹⁵ N HSQC and TROSY | _____ | _____ |
| ¹ H- ¹³ C HSQC/HMQC | _____ | _____ |
| Triple resonance backbone experiments | _____ | _____ |
| Sidechain TOCSY experiments | _____ | _____ |
| NOESY experiments | _____ | _____ |
| Backbone relaxation experiments (¹⁵ N) | _____ | _____ |
| Other (specify, use other side if more space is needed): | | |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| I have been trained to implement new pulse sequences | _____ | _____ |

Investigator Information

Investigator Name: _____ PI/Lab Name: _____

Investigator Signature: _____ Date: _____

CCOM NMR Facility Instrument Training Guidelines

Insert your sample correctly into the spinner turbine. Use the depth gauge to make sure your sample is centered in the coil region of the probe. **Under no circumstances should the sample be inserted further than the bottom of the depth gauge!** Be careful not to bend the tube while putting it into or taking it out of the turbine or it may break.

Turn on the eject air and wait to make sure any sample currently in the magnet comes out before putting your sample in. Never put a sample in the magnet unless you're absolutely certain air is flowing.

Despite all precautions, a sample tube may break inside the magnet. If this happens, promptly inform facility personnel; if this happens at night or over the weekend, put a note on the spectrometer so nobody else uses the instrument until the problem can be resolved. This is unlikely to be a major problem unless it happens inside the cold probe. Therefore, the users on the Bruker 800 (equipped with a cryoprobe) should exercise extreme caution during sample changes.

Properly tune and match NMR probe. Both Bruker NMR spectrometers have ATM probes (capable of automatic tuning and matching). Therefore, this mostly applies to the Varian spectrometer, where the user must turn knobs to tune the probe. The knobs control delicate variable capacitors. Turn them slowly and carefully, and stop turning immediately if you feel any resistance. If the capacitor breaks, the probe will need costly repairs.

Use proper power levels for your NMR experiments. Under normal circumstances, the only way you can damage the NMR spectrometer from the console is by applying too much power to the probe, which can damage the probe and/or the amplifiers. For no reason should you exceed safe power levels and duty cycles. Excessive pulse or decoupling power could also overheat your precious NMR sample. If you are at all uncertain of what constitutes safe usage, check with facility personnel.

Do not run experiments you haven't been trained for. As you progress from simple 1D spectra through HSQCs and on to more complex multidimensional experiments, the number of parameters that need to be carefully set up and calibrated increases. If the experiment is set up incorrectly, you will at best get poor data and waste instrument time and at worst you could damage the instrument and/or your sample.

If you want to run something new or are unsure whether your current level of training is sufficient to set up and run a particular experiment, ask Facility personnel for assistance. Once you've been trained and run several triple resonance experiments, most new pulse sequences should require only minimal additional training.

Reserve your instrument time in advance. You may request instrument time by calling or sending email to Liping Yu (4-3172, liping-yu@uiowa.edu) or Andrew Fowler (4-2937, andrew-fowler@uiowa.edu). Please request time at least one week in advance.