

Safety and Good Laboratory Practice in the NMR Laboratory

Safety:

NMR spectrometers are not inherently dangerous, and “fear” of the instrument should never discourage use. However, the strong magnetic field and large amount of energy stored in the magnet requires that certain practices must be followed. This ensures safety to both people and the instrument itself.

1. Persons with life sustaining implanted medical electronics such as pacemakers **must not** enter the NMR laboratories. Some areas on the floor below the laboratories (200 level) may also be restricted, and will be clearly marked.
2. Modern orthopedic implants (screws, plates, rods, artificial joints etc.) are usually non-magnetic, and should be safe near an NMR magnet. However, you **must** check with your physician **first**, before entering the NMR laboratories.
3. Magnetic objects such as chairs or tools **must** be kept away from the NMR magnets at all times. The magnetic force on an object from an NMR magnet changes from imperceptible to uncontrollable over a distance of only a few centimeters. Severe and extremely expensive damage to the spectrometer can result when unrestrained magnetic objects strike the magnet. The safe distance for magnetic objects is marked with black/yellow striped lines on the floor.
4. Protective gloves **must** be removed before handling the sample spinners or the keyboard. Nobody wants the chemicals that you are trying to keep off your hands on the keyboard or spinners.
5. In the extremely unlikely event of a magnet quench (large cloud of cold gas being expelled from the top of the magnet), leave the NMR laboratory **immediately** and contact Kirk Marat (home: 269-2225, cell: 228-6474). **Do not** re-enter the laboratory until you receive permission from facility staff.

Good Laboratory Practice:

1. Samples tubes should be of good quality and in good condition. The minimum NMR tube grade is Wilmad 507-PP, or the equivalent from other manufacturers. Wilmad 528-PP or better are recommended for the 500 MHz and 600 MHz instruments. **Damage to the instrument caused by improper or broken tubes will be charged to the researcher involved.**
2. Samples must be properly prepared and should be labeled. A separate handout on sample preparation is available.
3. Weighing the sample (rather than guessing at the weight) makes it much easier to judge how many scans are required for 2D and ^{13}C experiments.
4. Sample tubes and spinners should be cleaned with a “KimWipe” before inserting into the spectrometer.
5. Data should be transferred from the spectrometer to your personal computer and archived onto permanent media (CD, DVD, tape, etc.) as soon as practical. Any data older than one month may be deleted from the spectrometers by facility staff **without notice**.