

## **Varian 500 and 600 NMR Management**

NMR Director: Ted Burkey ([tburkey@memphis.edu](mailto:tburkey@memphis.edu)) x2634

NMR Manager/Varian Supervisor: Truc Chi Pham ([tcpham@memphis.edu](mailto:tcpham@memphis.edu)) x4865

### **Varian NMR supervisor responsibilities.**

Daily:

- Notify any malfunctions or irregularities
- Record levels and flows of liquid nitrogen and liquid helium, as well as room temperature and oxygen percentage
- Instrument troubleshooting as users request

Weekly:

- Notify the performance of the SF4 air compressor and PRON-10 nitrogen generator units
- Record number of running hours, tank pressure, exit pressure and dew point of SF4 unit
- Record number of running hours, tank pressure, exit pressure and oxygen percentage of PRON-10 unit when it is on service

Monthly:

- Perform sensitivity and lineshape tests
- Update shims for CDCl<sub>3</sub> and acetone-D<sub>6</sub>
- Cleanup: delete unnecessary and junk files

Other maintenances:

- Liquid nitrogen refill every 3 weeks
- Shim map and gradient calibration every 3 months
- Auto calibration every 3-6 months
- Magnetic drift test every 6 months
- Full calibration after probe switching
- Swap probe between triple resonance and broad band probes according to users' request
- Data backup for all user as necessary

### **Manager and Director responsibilities.**

1. Supervise and train new users
2. Order liquid helium and fill dewar
3. Annually have training class for routine experiments.
4. Assist in training for non-routing expts to the extent of manager and directors training.
5. periodically replace air filters
6. Set up FACES and Varian accounts
7. Troubleshoot and fix problems consulting with instrument documentation and vendor engineer
8. Advise Department Chair and Facilities Committee on the necessity of instrument replacement or repair by vendor

## User Training on Instrument

- (1) Since many groups use the NMR most users should obtain training for routine use while observing members of their group.
- (2) Otherwise routine training will be administered once a year during the summer.
- (3) Dr. Burkey or Dr. Pham will assist in training for special experiments (VTNMR, protein NMR, NMR for X-nuclei, etc).

## User Guidelines and Scheduling

- (1) Priority for use of the Varian spectrometer is established by "reserving time" on FACES **prior to use**. If all or part of a reservation cannot be used then users must cancel unused reserved time so that others may use the instrument.
- (2) Sign in the log book **before** you begin using the NMR.
- (3) Users requiring instrument time longer than a week should discuss with Dr. Ted. Burkey or Dr. Truc Chi Pham for special arrangements.
- (4) If you are using the instrument and have not signed the log book, anyone can sign in, stop your experiment and log you out.
- (5) Do not allow others to sign-up and use the NMR under your account. You will be held accountable for their actions.
- (6) **Do not attempt to reboot any part of the NMR instrument if it does not appear to be operating correctly**. Get assistance from Dr. Ted Burkey or Dr. Truc Chi Pham.
- (7) All users must have an account or be currently enrolled in a class using the NMR.
- (8) Make a note in the log book if you observe anything unusual or have difficulties.
- (9) Remove the dust cover from probe inlet.
- (10) After you are finished, leave the 0.1% ethylbenzene/deuteriochloroform sample in probe, lock and shim the sample to obtain a stable lock signal, stop spinning and return the dust cover to top of probe inlet.
- (11) Instructional courses have priority even if a user has signed-in. However, course instructors must sign-in and notify any user who loses a reservation 24 hours in advance.
- (12) Repeated failure to conform to these procedures will result in loss of user privileges.

## Maintenance and repairs

See **Manager and Director Responsibilities**.