

## NMR Training and Access request Form

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**Keep pages 1 & 3 for your record, only return page two for your application.**

### Instruction:

1. Before entering any NMR Labs in the Center, one must attend a safety orientation.
2. NMR office is located in Room B-130. Please return the form before the date of your orientation.
3. You will be asked to sign to accept the following conditions at the safety orientation. Please ask questions and fully understand these special NMR safety features before you sign.
4. Deadline for checkout is four weeks after the date of orientation for hands-on users.

### Safety and Environmental impact in Nuclear Magnetic Resonance Facilities. UMD.

#### **Responsibilities, Risks and Liabilities Agreement:**

1. *NMR labs are accessible only to authorized personnel. No children (babies included) are allowed to enter the NMR labs. Staff members must be notified in advance if guest visitors would like to tour the facilities. You are liable for safety of your guests and any potential damage when safety policy is not being followed.*
2. *You will be exposed to strong magnetic fields (up to 15 Tesla maximum), once you are in the NMR labs. Strong magnetic fields and hence their potential danger always present even when electric power of the lab is off.*
3. *Keep all loose metal objects at least 15-ft from the magnets. The strong magnetic field attracts any loose paramagnetic metal objects nearby. The collision force is so strong that it can induce a structural collapse of the magnet, which in turn causes spontaneous boil-off of the super cold liquids in the magnet. A person around the collision (magnet) can be injured and it could be fatal.*
4. *To the best knowledge of the NMR community, no known health hazard has been reported when one is exposed to strong magnetic field. However, there is no guarantee that future findings may show otherwise.*
5. *Any person with metal implants, such as heart pacers, should not work or enter the NMR labs. The strong field and the radio frequencies of NMR spectrometers are known to interfere with heart pacers.*
6. *Follow laboratory safety policies and future updates included, both from the U of Maryland and from the NMR facilities. Use particular precaution when you step down from the platforms next to the super conducting magnet.*

### ACCEPTANCE:

**On the date** when you complete the safety orientation, you will be asked to enter in the NMR user record log, **your signature**, that will represent inclusively the following statement:

*“I have read the above mentioned 'responsibilities, risks and liabilities, and fully understand the potential danger, implication and risks described. I, with signature signed in the NMR safety orientation record log book, declare that staff members in the Shared NMR facility, Department of chemistry and Biochemistry at University of Maryland, are not responsible or liable for any possible mishaps caused by these working conditions. I will follow all the proper procedures as described in this form and the published NMR facility policy of the Department. I will be held responsible for any mishap due to my negligence or violation of the safety policy of the NMR facility “.*

## ***NMR Training and Access request Form***

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**Last Name:** (this entry will be your user ID , when you become hands-on user)

[illegible]

**First Name:**

[illegible]

**UM E-mail address: (mandatory)**

[illegible]

U ID Number (only required for new user)									
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**User Status (check one only):** Undergrad; Grad. Student; Postdoctoral fellow; UM affiliates.

**Training request (Check one only):**

- **Access as an observer ONLY (no hands-on and must be escort with user).**
- **Basic entry level NMR :(hands-on 400MHz spectrometer):**

**Name of Peer trainer (Qualification: with at least one year experience at UM NMR facility):**

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**Signature:** \_\_\_\_\_

Please ask him / her sign to confirm he/she is committed to train you.

- **Fully automation 400MHz spectrometer. (by staff only).**

**Remark: all other advanced NMR spectrometers (by staff only):**

Training will be conducted in mini-training workshop in small group. User must complete the entry level checkout and work with the 400MHz spectrometer at least three months.

**Sponsor Authorization:**

The undersigned sponsor authorizes the user to be trained and charge his/hers NMR&EPR training and usage to the sponsor's account. Penalty of \$100 will be post if the user failures to complete the appropriate check-out after one month from the on-set of the training program. The sponsor will pay the repair cost, if damage of spectrometer is induced by improper manipulation of the user. **Period and termination:**

Upon successful completion of the training, the user account will be activated until it is being cancelled or when the user is not active for two consecutive months.

**\*\*Faculty Name:** \_\_\_\_\_ **Signature:** \_\_\_\_\_

FRS: \_\_\_\_\_

**Department:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**\*\* If you are new to use the NMR Facility, please fill out for your research group a separate form "New Account registration" with FRS #.**

For cost on all NMR services, please refer to [http://www2.chem.umd.edu/nmr/contact\\_us.htm](http://www2.chem.umd.edu/nmr/contact_us.htm)

**Expectation for entry level NMR CHECK OUT (Open book)**P. 3 of 3  
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**Dead Line for check out:** \_\_\_\_\_  
Please e-mail staff at least 2 days in advance for your appointment.

**Name of your peer trainer:** \_\_\_\_\_

➤ Basic Procedure:

- a) Able to log on with your own User ID to activate the spectrometer.
  - b) Able to comply all basic safety procedure (no loose metal objects; proper sample insertion) when working in the NMR lab.
  - c) Able to collect a **properly shimmed** H1 spectrum within ten minutes.
  - d) Able to FTP raw FID data to one of the workstations and process with TOPSPIN software within TEN minutes.
- The spectrum should be properly phased and calibrated chemical shifts.



➤ You will be tested using the commands  to do phase adjustment.

➤ Basic understanding:

You are expected to know the function of the essential parameters and commands: D1, NS, em; ft; apk.

➤ Basic use of PLOT EDITOR:

- a) First plot: Using layout : 1D\_H1.xwp, plot spectrum with the following items:
  - Plot the full spectral width (typically 12 ppm).
  - Major acquisition & processing parameters listed (such as SW, NS, LB etc).
  - Should not show any integrals and chemical shifts. (They will be plot in the next plot).
  - The title shows your name and USER ID.
- b) The second plot --- From the plot display in the PLOT EDITOR window, delete the listing of parameters, but enable the listing of shifts and integrals.
  - Expand and plot only the aliphatic region (as instructed during the checkout).
  - Make full use of the length of the chart paper.
  - Expand the vertical scale such that the smallest signal (typically the solvent) should be ~ 0.5 to 1.0 cm. The integrals are adjusted within the scale (not clipped) and are not overlapping the base line of the spectrum (see demo plot shown to you at checkout).
  - Pay particular attention on integrations if your spectrum contains multiplex signals, namely proper slope and bias adjustments.

Basic reference: <http://www2.chem.umd.edu/nmr/umcpnote/index.php>