

Nuclear Magnetic Resonance Users Guide

HOSEI UNIVERSITY
Center for Instrumental Analysis

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NMR SYSTEM

Super Conducting Magnet : BRUKER ASCEND 400 (9.4 T)

Spectrometer : AVANCEIII 400 MHz One Bay

Probe : 5mm Automatic tuning/matching 1H/19F, 15N~31P Multinuclear Probe

With gradient coil, and liquid Nitrogen re-condensation device

*Our system is mainly set up for solution NMR.

Please contact us in case of solid observation.

PREFACE

This user guide is intended for the members of HOSEI UNIVERSITY.

Users must be familiar with the basic principles of chemistry, physics, and NMR operation.

Please contact the following email address if you are not applicable.

meiko.hasebe.34@adm.hosei.ac.jp

*We offer NMR training lectures for beginners.

NMR SAFETY

✓ Iron and other ferro magnetic objects are not allowed to be near the magnet.

✓ Leave all your belongings on the entrance table.

Especially your credit cards, student ID card, cellphones and wrist watches.

✓ Persons with cardiac pacemakers and other metallic implants are prohibited.

✓ Do not lean on the magnet, nor push the magnet.

Hard actions against the magnet might cause quench.

*Quench : When the superconducting magnet loses the ability to superconduct, the stored energy will be released as heat. Then the liquid helium inside the magnet will boil into gas and burst out. The room will be filled with helium vapor, and cause oxygen deficiency. Evacuate from the room immediately. Call 119.

Do not enter the room until helium is completely boiled off.

NMR SAMPLE PREPARATION

- Prepare the samples in your lab.
We do not store NMR tubes, nor deuterated solvents.
- Use high quality 5mm diameter sample tubes. (clean and dry)
- Filter sample solution to prevent particles.
- Keep the sample volume 0.5~0.6mL.
Please use the gauge to check the volume. Estimated height of the solution is 4cm.
- Wipe the tube before inserting into the spinner.
- Do not use tubes that are loose in the spinner.

VARIABLE TEMPERATURE

BBFO probe temperature range is from -150 to 150°C.

Please contact us before changing the temperature.

You are not permitted to change the temperature without permission.

USERS REGISTRATION

Users registration is necessary before using NMR. Please register with permission of your lab professor. Registration is accepted anytime.

WORKSTATION

The NMR workstation OS is Windows 11. Software used for NMR is TopSpin 3.7.

TRAININGS

We provide training lectures for beginners.

Until you get comfortable using the NMR, please feel free to ask for help.

SERVICES

We only provide NMR services to on-campus users.

Please contact the following email address if you don't belong to HOSEI University.

meiko.hasebe.34@adm.hosei.ac.jp

Staff's in-office hours: Monday, Wednesday, Friday 9:00~15:00.