



*Terms of Use for the
Central Analytical Laboratories of the
Catalysis Research Center (CRC)*

Version 1.0, March 19, 2021



1. General Information

The Analytical Department of the CRC is a shared instrument facility of the TUM which is open to all scientists, collaborators and industrial partners with the aim to provide instrumentation and/or technical expertise for a broad spectrum of analytical methods relevant in catalysis science. The Analytic Department is organized in the following four central labs:

- Central analytics lab
- Single Crystal X-Ray Diffractometry (SC-XRD)
- Nuclear magnetic resonance spectroscopy (NMR) and mass spectrometry (MS)
- Elemental analysis

All labs with the exception of the elemental analysis lab are available 24 hours/day, 7 days/week. Regular working hours are Monday-Friday from 9 am to 5 pm.

2. Scope of the Guidelines

These guidelines regulate the use of resources available in the Analytical Department of the CRC and determine the rules for the offered services. This applies to:

- the use of equipment, including the control- and evaluation-computers as well as the software that runs on them for data evaluation,
- laboratory- and office-space, respectively
- the use of services by the scientific and technical support staff
- The terms of use are binding for all users.

3. Services, equipment and contact persons

The Analytical Department of the CRC offers support through the equipment housed within and via the research support scientists and technicians working within. The users of the department interact with both during their research. There are two kinds of user interactions within the Analytical Department of the CRC:

- **The user operates the instrument individually.** Under the condition of a completed hands-on training as well as safety instruction, the user books the instrument and works on it independently. For more information see the section 5 "Instructions and training".
- **The user submits a request for service analysis.** Requests for full service analyses may be submitted by every user. However, the availability of this service strongly depends on the free capacities of the technical staff. This service analysis is offered on numerous (but not all) instruments. Elemental analyses are available on the basis of full-service-analyses only.

Description of the instruments and the **range of services** as well as a list of contact persons can be found on the [CRC homepage](#).



4. Permission of use

The CRC Analytical Department is primarily open to:

- 4.1. researchers and students of Principal Investigators (PI) who are members of the CRC
- 4.2. researchers and students of Principal Investigators (PI) of the Department of Chemistry of the TUM who are not members of the CRC

In addition, other users can get access to our Analytic Department labs and services:

- 4.3. researchers and students from other Departments of the TUM
- 4.4. cooperation partners
- 4.5. coworkers from external organizations/industry

Depending on the analytical method or instrument, not all user requests may be immediately met. The head of the respective lab will decide on time allocation and/or access to the instruments according to the order given by 4.1- 4.5.

5. Instructions and Training

Users are all persons authorized by the PI in consultation with the head of the individual central lab of the Analytical Department of the CRC according to section 4.

There are three user levels with respect to qualification and access permission:

First level: are users without special training. Continuous support of the CRC central lab staff or super-user is required.

Approved: are trained users, but with limited experience. Technical assistance and support may be required for special operations. Users may operate the instruments within the bounds of their training only. Instruments may be booked and operated independently.

Super-users: are trained and experienced users with no access restrictions. This status is granted at the discretion of the relevant lab head. The user status does not commute between instruments.

6. Access to the instrument

To operate a device, the user must receive a basic instruction and practical training, which includes a description of the system and its operation. The training includes information on how the data is stored and transferred and how to avoid pitfalls.

Instrument training and application assistance will be provided to the first-time user by CRC support staff or super users. However, this arrangement is laboratory specific and the training must be pre-authorized by the respective laboratory head.



Use of an instrument requires special reservation using an in-house on-line [booking system](#). The system assists in resource registration, tracking usage, reporting and billing. The registration is mandatory!

Operation of the instruments on behalf of others is only permitted to super-users unless pre-authorized by the head of the individual central lab.

7. How to become a user

First time user:

- Contact the relevant laboratory head by email or telephone to arrange a face-to-face meeting and receive guidance on the procedures and a date for the training session(s).
- After completion of the basic instruction and practical training, bring the training confirmation document signed by the trainee and the trainer to the respective laboratory head.
- You are registered with an account in the online booking system that allows you the use of the resource unit(s) on which she/he has been trained.

8. Instrument booking

To perform a measurement on a device, you must create a reservation in the [booking system](#). It is obligatory.

If you are unable to use a booked session, you are requested to cancel the booking no later than 24 hours before the scheduled time. A 24-hour cancellation notice is required to avoid fees. If insufficient notice is given, you may be billed.

In any case, the user will be charged for the maximum time booked, regardless of whether the device was used or not (=forgotten about/forgotten to cancel).

Sessions that are not taken in time for the scheduled start will be offered to other users and fees will remain in effect.

Additional bookings beyond the booked time must be authorized in advance by the respective lab head and approved by the users who have booked the following session on the same device.

You are entirely responsible for the session booked, including any damage or inappropriate instrument use during that session. When you have made the last booking for the day, ensure that the system is left clean and in a safe mode.

If a device is not left clean and in working order, the time required for cleaning will be charged as a service action. If this occurs repeatedly, your usage permit will be revoked.

You are entitled to book the instrument only for yourself.



The super-user taking the service measurement has to book this session on behalf of the requesting group. Please contact the respective laboratory head to obtain additional service booking access data.

Use the instrument efficiently: estimate measurement times reasonably and avoid speculative bookings. Plan your work in advance and make sure that samples are prepared in time.

Record the use of the instrument in the logbook (or elogbook), as specified by the respective laboratory head, with a note on the important measurement parameters, the samples used, any error messages, breakdowns or the use of instrument settings that deviate from the standard.

If necessary, the booked (or programmed) measuring times can be changed by the CRC supervising personnel of the respective central laboratory. These changes will be communicated to the users immediately.

9. Data handling rules, backup and storage

USB plugs of the instrument controlling PCs are blocked and may not be used (exceptions may be specified by the respective lab heads). In addition, most of the control computers have no access to the internet.

However, PCs are attached to network storage and transfer data servers. For an effective data backup, all measurement data must be therefore saved in the data folders assigned to the individual research groups. The user must keep the data organized: at the end of each measurement session, all (measured and evaluated) data must be transferred into the respective folder assigned to the work group.

All data including the raw data are the properties of the users. According to the DFG [Proposals for Safeguarding Good Scientific Practice](#) recommendations we store and safeguard the primary data for ten years. The acquired measurement data are saved directly on the respective controlling PCs. All data are backed up to servers of the CRC Analytic Department and kept for two years. The raw data are additionally backed up to TUM LRZ Servers (Leibniz Supercomputing Centre of the Bavarian Academy of Science and Humanities) for further eight years.

The user is responsible for the (long-term) storage of her/his collected data outside of the CRC Analytical Department.

10. Fees and Cost Model

The CRC Analytical Department charges all services as well as the use of instruments in order to cover the direct cost for consumables, maintenance, supplies and spare parts. All modalities and prices for the use of the equipment and services are available upon request at the CRC Secretariat.



11. Acknowledgment

All users who use the data acquired, analyzed or processed at the CRC Analytic Department must acknowledge this in their publications, conference contributions or grant applications. For example: "We would like to thank the Catalysis Research Center of the Technical University of Munich for providing assistance in chromatography analyses". Such an acknowledgment is not required if the CRC is included in the author address.

12. General rules and responsibility of the users

We strongly recommend refresher training if a device has not been used for more than 6 months. If you cannot remember how to operate a system to which you have already been introduced, please do not hesitate to ask CRC support staff for advice.

Leave the workplace in a perfectly tidy condition. Refrain from activities that cause infrastructural damage or disturb others in their scientific activities.

Inform CRC support staff immediately if any problems or errors occur with the equipment. This includes a note in the logbook as well as an email to the respective laboratory head.

If an error occurs during working hours, request assistance. If an error occurs outside regular working hours, the device must be left in a safe mode, the error must be reported immediately.

Changes or modifications to the equipment or infrastructure are not permitted without the explicit approval of the appropriate CRC support personnel or CRC management. You are not permitted to make major alignments or adjustments outside of the training you have received. Requests for changes or adjustments to the device must be discussed with the responsible CRC support staff at an early stage.

Samples must be clearly labeled and must not be stored in any of the CRC's central analytical laboratories.

The supporting staff assumes no responsibility for the storage of samples. At the end of the assigned measurement session, you must leave the workstation in a clean and tidy condition and return the instrument to a safe operating condition. The measured samples and all items must be returned to your laboratory. Any sample that is not labeled or stored for more than one week may be disposed of without further notice.

13. Responsibilities and obligations

The CRC Analytical Department undertakes to appoint a contact person for the support of users and to grant access to the stored measurement data of users. A list of contact persons can be found on the [CRC homepage](#).

In the event of equipment defects or maintenance work, the use of an instrument may be restricted by the head of the respective laboratory and the CRC supervising personnel.



The head of the laboratory and the CRC supporting personnel:

- are authorized to check the progress of the measurements at any time and to stop them in case of malfunctions.
- may check the data of all users during the measurement if this is necessary, e.g., to eliminate malfunctions and to ensure optimal measurement operation.

The CRC Analytical Department does not guarantee that all specific user requirements can be met (e.g., adaptation/modification of the instrumental setup according to certain experimental requirements). It does also not guarantee that its instruments and resources can be used error-free and without interruption, neither that all data will be saved permanently and without errors.

The CRC Analytical Department supports their users if necessary and within the limits of the capacities in the interpretation of the measured data. However, the responsibility for the interpretation remains with the users.

14. Safety

All safety and health regulations for work in laboratories apply: "[Working Safely in Laboratories](#)" and the Laboratory Regulation for CRC. All users must comply with these rules.

In addition, special safety regulations are observed for some facilities (X-ray instruments (Laboratories 4032 and 3028), and Raman spectroscopy (Laboratory 2042)). These rules are explained as part of the mandatory annual radiation and laser protection training and equipment instruction.

Food and beverages may not be taken into any part of the CRC Analytical Department. This applies to both laboratory and laboratory-office space classified as part of the laboratory.

Users are not allowed to work alone in the laboratory at any time.

Outside regular working hours (Monday-Friday after 5 pm) and on weekends, only authorized users have access to the laboratories and the instrument ensemble.

New procedures (i.e. non-standard measurements) may not be performed outside working hours.

15. Disobeying Rules and Regulations

If there are multiple instances of disobeying the rules by a user, the following formal sanctions on access to the CRC Analytical Department will be taken:

- 1st formal sanction: formal written warning letter, copied to the group leader
- 2nd formal sanction: two-week exclusion from CRC Analytical Department
- 3rd formal sanction: discussion with CRC Director concerning permanent exclusion



Notice: These “Terms of use for the Central analytical Laboratories of the Catalysis Research Center” are outlined according to the „[DFG-Vordruck 55.04 Hinweise zu Gerätenutzungskosten und zu Gerätezentren](#)“.

These rules and regulations are subject to change. (The latest version of this document is available on the CRC Homepage). If you've got suggestions or complaints, please bring them to the attention of CRC Technical Business Director.

Garching bei München, March 19, 2021
Prof. R. A. Fischer, CRC Director