

General information

The Materials Characterization Facility (MCF) includes several instruments dedicated to many aspects of the characterization of materials, managed by expert personnel. Labs are located at the -1 and 0 floors of CCT, plus some instruments that are hosted by other groups.

Prior to accessing any laboratory, users must read these rules and the specific laboratory ones and affix their signature indicating that they agree to abide by them.

Users violating any of the facility rules may lose their facility access rights.

More information can be found on the [Facility website](#). Reservations and requests for training or service are processed through the [iLab Core Management system](#)

Access Eligibility

All IIT staff, collaborators and students are eligible to use the MCF. Users external to IIT may request for service measurements or be allowed to use the facility at the discretion of the MCF personnel. Similarly, access can be granted to industrial partners, whenever contractually agreed.

To access all the services, users must log in on the [iLab Core Management system](#) with their IIT credentials when applicable, or with iLab credentials, if external users.

Training

The use of any instrument without the established training procedures is forbidden. Requests for training can be submitted on the [iLab Core Management system](#). For the first training session, users must coordinate with the laboratory responsible for the choice of the sample on which the training will be performed. Once training has been completed and the lab responsible is positive that a user can work responsibly without supervision, system access rights and booking rights will be granted. Note: users that will not acquire the needed basic skills to operate an instrument during the offered training sessions will not gain access and booking rights.

Users are prohibited from training other users. Only facility personnel are authorized to provide training to new users.

Health, Safety and Environment

During the first training session, users will also be informed/trained on the specific health, safety and environmental risks of the laboratory according to IIT ISO 14001:2015.

- None of the Facility Labs is equipped for safe chemical processing. No chemical work more than rinsing or brushing with DI water or Ethanol and should be performed in the Facility Labs. Acetone can be used only under the fume hood located in the room of Requirement.
- All waste must be disposed of according to the following table:

Type of waste	Container
Gloves and contaminated paper (non-bio)	Black bins with GREEN label
Containers and glass slides	Black bins with RED label
Bio-contaminated material (non sharp)	Yellow bioboxes
Bio-contaminated sharp objects	Yellow/red agoboxes
Bio-contaminated liquids	Tank in Biolab
Non-halogenated solvents (ethanol, isopropanol)	Tanks with RED label
Aqueous waste	Tanks with BLUE label

- Non-contaminated waste must be disposed of in the recycling containers located in the corridors.
- If you notice water on the floor, leave the laboratory immediately and alert the Facility Staff.
- In case of alarms beeping (especially oxygen sensors), leave the Lab immediately and alert the Facility Staff.
- In case of any equipment failure or malfunction, users shall never try to fix the issues but inform the Lab manager immediately.
- No food or beverages are permitted in the laboratory.
- The use of any device that would prevent you from hearing an alarm (e.g., headphones) is forbidden.
- Desktops, devices, spaces and instruments used have to be always left clean and tidy.
- An emergency numbers list can be found affixed close to the phones and on the Lab doors.
- Always label samples with clarity. Remove samples from the instruments and workbench. All samples unattended will be disposed of.
- Operations with liquid nitrogen must be performed only by trained users, under supervision of technicians in charge

ICT rules

- Users must copy their data from the PC controlling the instrument at the end of the session.
- Users are solely responsible for the preservation and security of the data collected. We do not guarantee that data will be backed up and safe from deletion and we do not guarantee that others cannot access and copy data of other users.
- The local data will be periodically deleted to save disk space.
- No software of any kind can be installed on the Lab computers without authorization.

Booking policy

MCF includes both open-access instruments and instruments run only by facility staff.

Sessions on the open-access instruments can be booked on the [online system](#) under the SCHEDULE EQUIPMENT tab. There are booking limits for each instrument, detailed in the table below. If users require additional sessions, they must contact the laboratory manager, who will grant them if available.

For the cancellation policy, refer to the specific laboratory rules.

Instrument	Session duration	Max booked hours	lab opening hours		persons in charge
XRD PANalytical	1 h	4*	9.00 – 17.00*	max 3 sessions/day	L. Pasquale
AFM Park	1 h	8	8.00 – 17.00	max 3 sessions / day	R. Carzino, S. Dante
AFM AR	1 h	12	8.00 – 17.00	max 3 sessions / day	M. Salerno
AFM JPK	2 h	12	8.00 – 17.00	max 3 sessions / day	R. Carzino, S. Dante
Profilometer AMBIOS	0.5 h	8	8.00 – 17.00	max 3 sessions / day	R. Carzino
Profilometer ZETA	0.5 h	4	8.00 – 17.00	max 4 sessions / day	R. Carzino
Instron dynamometer	1 h	8	9.00 – 17.00		L. Ceseracciu
DMA Q800	2 h	--	9.00 – 17.00		L. Ceseracciu
Piuma Chiaro	1 h	12	9.00 – 17.00		L. Ceseracciu
CSM indentation platform	1 h	--	9.00 – 17.00		L. Ceseracciu
Horiba LabRaman HR800	0.5h	8	9.00 – 17.00		R. Carzino
inVia Renishaw Raman	2 h	8	9.00 – 17.00		S. Dante
FT-IR Vertex 70v	1h	8	9.00 – 17.00	max 3 sessions / day	L. Pasquale

*: in addition to the 4 sessions/week, each user could also book one overnight session/week (corresponding to a 15 hours session from 17.30 to 8.30)

Activities on the other instruments (see list below) can be requested on the [online system](#) under the REQUEST SERVICES tab. The lab responsible will take care of booking the requested instrument for the specific requested activity and will run data acquisition accordingly.

instrument	Typical measurement	person in charge
XPS Kratos UltraDLD	Surface chemistry	M. Prato
XPS Specs Lab2	Surface chemistry	R. Carzino
Extreme condition XRD Lab	X-ray diffraction	S. Marras
Micro XRF M4 Tornado	Composition and element distribution	L. Pasquale
BioForce NanoEnabler	Microsized spot deposition	S. Dante
KSV Langmuir-Trough	Monolayer deposition	S. Dante
KSV QCM-Z500 microbalance	Nanogram change detection	S. Dante
Quantachrome BET	Gas sorption	L. Pasquale

Out-of-hours access

Use of instruments out of the core hours is permitted exceptionally upon authorization of the lab responsible, who will grant it on a case-by-case base.

Acknowledgments/Authorship Policy

Any papers incorporating data acquired or analyzed in the MCF must acknowledge the use of the MCF. Please include a statement in the acknowledgments section, such as "We thank the Materials Characterization Facility at the Fondazione Istituto Italiano di Tecnologia for help with [characterization]". Occasionally the MCF staff may become substantially involved in experimental design, data acquisition, or data analysis, meriting co-authorship. In general, ordinary training and assistance with instruments do not merit co-authorship. However, in cases where there was a substantial contribution to the project development, both the user and staff should consider whether this merits co-authorship.