

INDIAN INSTITUTE OF TECHNOLOGY BOMBAY

FDXM -IRCC Four Dimensional X-ray Microscopy (FDXM) Central Facility

E mail: fdxm.saif@iitb.ac.in

Website: fdxm.in

Registration Process:

I) Internal Users:

Users within IIT Bombay can apply from <http://drona.ircc.iitb.ac.in>. The form should be completely filled up and all the sample details must be provided in the requisition form. Users need to be present at the time of analysis on the allotted appointment date/time. If a user wishes to change his/her time slot, an email should be sent immediately to fdxm.saif@iitb.ac.in requesting change in appointment.

II) External Users:

- Academic Institutions: You can come in-person or send a letter from the Guide/ HoD on the Institution's Original Letter Head (stating that the analysis is for research purpose, to qualify for academic concession) along with the attached Sample Requisition form and Non-dangerous Material undertaking Form. The letter should be addressed to Prof. Asim Tewari, Convener, Central FDXM Facility, SAIF, IIT Bombay, Powai, Mumbai-400076.
- Government R&D Labs: You can come in-person or send a letter signed by an authorized signatory of your Institution on Original Letter Head (stating that the analysis is for research purpose) along with the attached Sample Requisition form and Non-dangerous Material undertaking Form. The letter should be addressed to Prof. Asim Tewari, Convener, Central FDXM Facility, SAIF, IIT Bombay, Powai, Mumbai-400076.
- Industry & Non- Government Agencies: You can come in-person or send a letter signed by an authorized signatory of your Organization, along with the attached Sample Requisition form and Non-dangerous Material undertaking Form. The letter should be addressed to Prof. Asim Tewari, Convener, Central FDXM Facility, SAIF, IIT Bombay, Powai, Mumbai-400076.

You are requested to mention in your request letter that “We agree to acknowledge the FDXM-IRCC FDXM Central Facility of IIT Bombay, when the data from the FDXM lab are used in our papers/reports/thesis or any other publication in the public domain”.

The information on such acknowledgements with appropriate reference should be communicated to FDXM lab vide email fdxm.saif@iitb.ac.in. Kindly send the complete publication reference (Journal name/volume number/names of the authors/date of issue of the publication etc.)

Charges for External and Internal Users:

Description	Academic		National R & D Lab		Industry/Non Govt.Agencies		Internal users
	Unit price per hour (INR)	Service Tax (as applicable) Currently 18% (INR)	Unit price per hour (INR)	Service Tax (as applicable) Currently 18% (INR)	Unit price per hour (INR)	Service Tax (as applicable) Currently 18% (INR)	
Non-destructive interior imaging of the sample using Four Dimensional X-ray Microscopy(FDXM)	1500	270	4000	720	6000	1080	Unit price per hour (INR) 750

- Payment should be made against the proforma invoice provided, once the scanning is done, in favour of "The Registrar, IIT Bombay, P and C Account".
- Appointment: The users will be informed about their date and time-slot by email. If the day and time-slot is not suitable for you, an email request should be sent immediately for an alternate slot.
- Time frame for providing the experimental data depends on the availability of the machines and various external factors.
- The scan time is dependent on the sample type, physical dimensions, magnification, type of tomography and other factors.
- Sample Submission: Samples are to be brought in-person on the date of your appointment for analysis or it can be couriered to Prof. Asim Tewari, Convener, Central FDXM Facility, SAIF, IIT Bombay, Powai, Mumbai - 400076, along with the Request Letter and Sample Requisition form and Non-dangerous Material undertaking Form.
- Results: Since very large volume (several GBs) of experimental data is produced, the data would be provided on an external hard drive which needs to be provided along with the samples.
- Return shipping charges need to be paid, if the samples need to be returned to the originator after testing.
- We are not responsible if the samples or external hard drives are damaged in transit.
- The attached FDXM Requisition Form should be completed and signed by competent authority prior to sending the samples. Please provide a hard copy along with the samples and also provide a soft copy by email to fdxm.saif@iitb.ac.in.
- The samples should not be hazardous, chemically or physically unstable or reactive when exposed to X-rays or during handle. The samples should

conform to the attached form and be provided along with a duly signed Non-dangerous material undertaking Form.

- The samples along with external hard drives, Sample Requisition Form and Non-Dangerous Material Undertaking Form should be couriered to Prof. Asim Tewari, Convener, Central FDXM Facility, SAIF , IIT Bombay, Powai, Mumbai-400076.
- Tax invoice would be provided to the end user once the payment, done against the proforma invoice, is received.

GENERAL INSTRUCTIONS TO THE USERS

1. The experimental data provided is only for research / development purposes. These cannot be used as certificates in legal disputes.
2. Only one sample will be analyzed against a single Registration Form.
3. MSDS (Material Safety Data Sheet) should be given along with samples to ensure that the samples are not toxic or hazardous. Samples will not be accepted unless accompanied by MSDS.
4. Please mention if the samples need to be returned to the originator after testing.
5. Test data would be returned on an external hard drive which needs to be provided along with the samples.
6. The experimental data will be provided in the form of a stack of TIFF files and does not do any further analyses or interpretation of the data.
7. The experimental data would only be stored at our facility for only 90 days after returning the hard drives.

Four Dimensional X-ray Microscopy, IIT Bombay, Mumbai Sample Requisition Form

1. Sample Name and ID No. (Please provide a unique ID No. to each sample)	
2. Sample material (chemistry and phases)	
3. Is the sample solid/liquid/suspension/powder/etc.? (Liquid/suspension/powder samples should be provided in a x-ray transparent sealed bottle of approximate 10mm diameter and 40mm height)	
4. Is sample biological? (biological samples should be provided in a x-ray transparent sealed bottle of approximate 10mm diameter and 40mm height)	
5. If sample is biological it would be tested only after approval by institute ethics committee	
6. What is the size of the sample (LxBxH in mm)?	
7. Tomographic details:	
a) What are the various phases present in the sample?	
b) Will the sample lead to x-ray absorption contrast? If not then what contrast mechanism is expected?	
c) What features/phases are to be imaged?	
d) What is the typical feature size?	
e) What is the typical volume fraction?	
f) What is the intended use of the tomography? (This is to help the operator identify what to image)	
g) What spatial resolution is required from the 3D tomography?	
h) Any other important information about the sample.	
13. Special requirements, if any?	

Authorized Signatory
(Date, place and stamp)

Four Dimensional X-ray Microscopy, IIT Bombay, Mumbai

Non-Dangerous Material Undertaking Form

I undertake that the provided sample (Sample Name and ID No.)
fulfills all the below conditions:

- is not biological toxin
- does not contain (whether dead or alive) bacteria, viruses, fungi, and parasites
- is not a part of animal testing
- is not (and cannot be) hazardous
- cannot contaminate equipment/holder
- is not radioactive
- is not poisonous and cannot become poisonous on exposure to heat/atmosphere/water/ x-rays (etc.)
- cannot cause exothermic reactions/evolve gases/liquids/etc. (including fire/explosion/etc.) on exposure to heat/atmosphere/water/ x-rays etc.

Authorized Signatory
(Date, place and stamp)

Please confirm the check list given below:

1. Demand Draft
2. Samples
3. External Hard drives
4. Sample Requisition Form
5. Non-Dangerous Material Undertaking Form