

HIGH RESOLUTION X-RAY DIFFRACTION LABORATORY

CENTRAL RESEARCH FACILITY

IIT (ISM), DHANBAD – 826004

[Please read the information given overleaf before filling up this form and put a tick (✓) in appropriate box]

1. I wish to get _____ (in words _____) number of samples be measured in hourly basis
2. The nature of samples is **BULK POWDER** (), **NANO POWDER** (), **POLYMER/RUBBER** (), **METTALIC** (), **LIQUID** (), **CORROSIVE** (), **POISONOUS** (), **HAZARDOUS** () or **OTHERS** (),
If others/poisonous/hazardous please elaborate: _____)
3. I wish to study the my sample/s using the

	Scan Type	Scan Range	Scan Speed*	Step size*
	(1D/0D)	(2 theta)	(Degree/min)	(Degree)
a) Powder Diffraction	[_____],	[_____ to _____],	[_____],	[_____].
b) Residual Stress measurement	[_____],	[_____ to _____],	[_____],	[_____].
c) GI-XRD	[<u> 0D </u>],	[_____ to _____],	[_____],	[_____].
d) Texture measurement	[<u> 0D </u>],	[_____ to _____],	[_____],	[_____].
e) SAXS	[<u> 0D </u>],	[_____ to _____],	[_____],	[_____].
f) Capillary XRD	[_____],	[_____ to _____],	[_____],	[_____].

*May vary as per the total scan time as per the slots/sample booking.

4. I need to analyze XRD data by Rigaku Smartlab Studio II software (per sample basis). I am interested in:
- Search match: (), Semi Quantitative analysis: (), Pore Size Analysis (), Residual Stress Analysis: ()
- Texture Analysis: (), Micro-area analysis: ().

Please allot measurement slots ofhour/s/samples (as per Annexure - I), the estimated charge for the work is ₹_____

User’s Name (block letter): _____ Name of Supervisor _____

Dept./Centre _____ Cell No: _____

Budget Head (optional).....

Signature of HOD/HOC/Guide/PI/Prof.-in-Charge

Signature of the User

Detail of amount deposited for the analysis

₹_____ (in words _____) has been deposited through #DD_____ (DD number)/#Net banking/Credit card/ Online _____ (Transaction ID) #Cash payment in the IIT(ISM) Cash counter_____ (Receipt No.) on _____(date).
#(Please provide the original DD/copy of Online/cash receipt along with this form).

Signature of the User

Please allot time and complete the work.

Signature of the Laboratory In-Charge

The above work has been done satisfactorily on _____(Date) within _____number/s of slot/samples and generated data has been delivered to me.

Signature of the Operator

Signature of the User

INFORMATION FOR HR-XRD USERS

Booking Rules

- 1) The HR-XRD is available for booking every week as follows: Total 10 halves / sessions in 5 working days (Monday - Friday). Each session is for three hours or 3 slots (including sample preparation, mounting, and data collection time).
- 2) One full slot is of 1 hour duration.
- 3) The slots time is estimated from the total time taken for one scan which includes, sample preparation time, sample mounting and data collection.
- 4) Four samples can be measured in each 1 hour slot (<15 minutes per sample) for obtained a decent quality data. The time is inclusive of including sample preparation, mounting, and data collection time. However, a maximum of six samples can only be accepted per one hour slot and to do this, the scan speed and step size will be adjusted to complete the measurement in the given slot itself.
- 5) Not more than 6 samples will be measured per hour slot using 1D scan mode and a maximum of 3 sample using 0D scan mode. Users are requested to restrict the number of samples according to the booked slot duration.
- 6) Only one booking is allowed to a User from a research group/PI/Guide in the various department in the institute. For the next slot, the User from the same research group has to wait until next round of new booking.
- 7) User must provide sufficient amount/quantity of samples for better data quality.
- 8) For the time being, XRD data analysis is the responsibility of user. The service of HR-XRD operator for data analysis is not presently available. Users are requested to not to insist operator for data analysis of the taken XRD data.
- 9) The nature samples should be declared properly.
- 10) Samples consisting of Arsenic, Mercury, Lead, Cynide and other poisonous compound/complex must be clearly mentioned in the booking form.
- 11) Bulk samples must be dried properly and ground well before depositing for XRD measurement. Moisture within the sample is not allowed for study.
- 12) Deadline for submission of slot booking forms is Thursday (up to 3 PM) of the previous week.
- 13) Allotment of slots will be notified at 4 PM on the next day (i.e. Friday).
- 14) HR-XRD is usually set for powder diffraction mode. Days/slots will be dedicated after consolidating similar samples/slots for the modes of operation, like, GI-XRD, Texture, SAXS, Capillary XRD, etc.
- 15) One can get a maximum of 3 consecutive slots at a time (approximately 3 hours) depending on the availability of vacant slots. Users who could not obtain a booking in the preceding fortnight will be given preference.
- 16) All payment must be made prior to booking of the slot and true copy of the payment slip (for deposit in IIT(ISM) cash counter in the head of **CRF-HRXXRD**) or copy of online Net banking/credit/debit card receipt or original DD (must be drawn in favour of **Registrar, IIT(ISM)** must be provided with booking form. No TAX is levied from the Internal user, while external users must add 18 % GST (extra) along with the usage charges of respective HR-XRD measurement.
- 17) All forms must be forwarded through the concerned HOD, HOC, PI, Guide or Prof.-in-Charge etc. and to be submitted in the HR-XRD Laboratory, Central Research Facility.
- 18) In case of power shut down or unforeseen disturbances, any unutilized slot will be subsequently compensated for in the next round of booking.
- 19) All users should inform composition and sample details to the operator and leave a copy of the data/results in the laboratory for internal records (log book).
- 20) Generated data will be provided to the user only through the new unused blank CD/DVD. No request will be entertain for providing generated data by e-mail, pen drive, external hard disk or any other means. Thus user may bring a new CD for collection of their data.
- 21) All users are sincerely requested to inform the laboratory if any of the results obtained from HR-XRD receive special recognition (publication, award, journal-cover-page, special citation etc.) and leave a copy of their reprint, photograph or award copy with the HR-XRD lab for internal documentation.
- 22) The charges for various HR-XRD measurements are given as follows in ₹:

Type of Measurement	Internal (Rs.)	Academic / R & D Institutes* (Rs.)	Industry* (Rs.)
Powder Diffraction	300/-	600/-	2000/-
Residual Stress measurement	300/-	600/-	2000/-
GI-XRD	800/-	1600/-	4000/-
Texture measurement	1000/-	2400/-	6000/-
SAXS	1000/-	2400/-	6000/-
Capillary XRD	1200/-**	2500/-**	6000/-**

*The charges are excluding 18 % GST.
**Extra of Rs. 200/- per sample is chargeable, if necessary capillary tubes are not provided along with the sample. Also, request for Capillary XRD will only be accepted if capillary tubes (consumable) are available in stock.