Requisition Form
Serial No. *Date:*

SCANNING PROBE MICROSCOPE (SPM) LABORATORY

CENTRAL RESEARCH FACILITY
INDIAN INSTITUTE OF TECHNOLOGY (ISM), DHANBAD – 826004

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

I wish to get ……. (in words) number of samples (on the basis of one sample per slot) to be examined /analyzed by (i) AFM, (ii) STM, (iii) LFM, (iv) MFM, (v) EFM, (vi) Nanoindentation.

The nature of my sample(s) is:
(i) Hardness: Hard ( ) [e.g. Metal, Ceramic, Semiconductor, IC, Wafer, Rock, Coal etc.] / Soft ( ) [e.g. Polymer, Rubber, Biological specimen etc.] / Delicate ( ) [e.g. Nanostructured thin films etc.] / others ( );
(ii) Structural form: Bulk ( ) / Sheet ( ) / Film ( ) / Nanostructured thin film ( ) / others ( );
(iii) Expected height variation of surface roughness within an area of 90 μm × 90 μm: ….. μm;
(iv) Expected surface feature size: …… μm / nm.
(v) In nanoindentation experiment is the upper limit of required force within 260 μN? Yes ( ) / Unknown ( )
(If 'Others' please elaborate ...……
…….....)
Please allot me slot(s) for above number of sample(s).
The data obtained will only be used for academic / research / development purposes and will not be used for any legal dispute.

User's Name (block letter): ……. Name of Supervisor: …….
Department /Centre ……..……Institution … … … … … … … … … … … … … … … … … …
Office /Laboratory Phone No. ……. Cellphone No: ……Email: … … … … … … …

Signature of HOD / HOC / Supervisor / PI / Prof.-in-Charge Signature of the user

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Details of analysis Charges:
The estimated charge for the work ₹ …… (In words ……..) has been deposited through †DD (Number ……..) / †Cash payment in the IIT (ISM) Dhanbad Cash counter (Receipt No. ……) on …….. (date) /

OR

To be debited from (**For internal users only: PDA/PDF/Project**): … … … … … … … … … …. ….

† *Please provide the original DD / CC of cash receipt along with this form.*

Signature of the User /Faculty /Supervisor /PI

The Operator
Please allot time and complete the work.

Signature of the System In-Charge

The above work has been done satisfactorily on ……. (date) within …….. number of slot and generated data have been delivered to me.

Signature of the Operator Signature of the User

INFORMATION FOR USERS

1. Operational Modes:

Scanning Probe Microscope Laboratory of CRF, IIT (ISM) Dhanbad, has two SPM systems (Dimension Icon and MultiMode 8) with one controller (Nanoscope V) from Bruker Inc. So only one system is operated at a time. Presently services are being provided on the modes: (i) Atomic Force Microscopy (AFM), (ii) Scanning Tunneling Microscopy (STM), (iii) Lateral Force Microscopy (LFM) or Frictional Force Microscopy (FFM), (iv) Magnetic Force Microscopy (MFM), (v) Electric Force Microscopy (EFM), and (vi) Nanoindentation.

2. Service charges of SPM operation:

Mode → Each Slot [#] [sample (s) / hour (hr)] →	STM * (1 s / 2 hr)	AFM (1 s / 1 hr)	LFM (1 s / 1 hr)	MFM (1 s / 2 hr)	EFM (1 s / 2 hr)	Nano-indentation** (1 s / 2 hr)
Internal users:[†] (in `) IIT (ISM)	600	500	500	600	600	800
External users:[‡] (in `) Academic and research institutes	1500	1000	1000	1500	1500	2000
External users:[‡] (in `) Industries	3000	2000	2000	3000	3000	4000

[#] All slots are per sample basis which means – one slot one sample. Time per slot means time of operation should not exceed the attributed number of hour. Processed images may be requested if surplus time is available.
[†] Charges are tax free.
[‡] Charges are mentioned excluding GST.
* Includes tunneling ($I - V$) spectroscopy [Scanning Tunneling Spectroscopy (STS)] if desired.
** Includes image and ($F - d$) spectroscopy.

All payments must be made prior to booking the slot. Original of the payment slip [carbon copy for deposit in IIT (ISM) Dhanbad cash counter in the head of CRF-SPM] or original Demand Draft [drawn in favour of Registrar, IIT (ISM) Dhanbad] must be provided with the booking form.

Internal users should directly get in contact with the SPM Laboratory to book a work slot. External users may contact with the SPM System in Charge, Dr. A. K. Kar, Associate Professor, Department of Applied Physics, Indian Institute of Technology (Indian School of Mines), Dhanbad – 826004, Jharkhand; Email: asit@iitism.ac.in, Phone: 326-223-5403.

To avail the concessional rate applicable for academic and research institutes, an external user should also send a documentary evidence (i.e. a letter of request from an authorized signatory in your institute's / department's original letter head) for the same along with the filled up requisition form and Demand Draft. Schedule of work slot will be informed by email.

3. Guidelines for sample requirement:
   (i) Samples should be prepared by the users.
   (ii) Samples should be dry and moisture free. There should not be loose particles on the samples i.e. they should be very clean and dust free.
   (iii) Size of the samples is restricted to: Diameter < 210 mm, Thickness < 15 mm; 210 mm vacuum chuck is available.
   (iv) Roughness height variation of the sample surface is restricted to: 10 μm within an area of ~ 90 μm × 90 μm (maximum capability). If one has no idea about the roughness of the sample, it has to be polished and should look shiny.

4. Expectations and limitations:
   (i) Users should have a primary idea of the intrinsic property of the material concerning the features they desire to explore. Do not pressurize or burden the operator with unusual expectations. Documentary evidence if available may be furnished as reference for discussion to assess the possibility.
   (ii) In nanoindentation experiment make sure the requirement of upper limit of force for your sample. If it is more than 260 μN, our AFM does not fit your need.
   (iii) Observation of atomic features is not a usual matter except certain extremely favorable conditions. So generally it is a “No”.
   (iv) If one has any doubt about the availability of any service or needs clarification regarding any aspect, please discuss before making payment for the service.
   (v) The operator will not be responsible for any damage to the sample during operational procedure.
   (vi) Samples are to be brought by the user to the facility on the date and time of appointment for analysis. External users may send their samples to the System in Charge by post at their own risk.

(vii) Analytical data are provided by email / in CD (unused i.e. blank and new) to be brought by the user.