INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH

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NOTICE INVITING EXPRESSION OF INTEREST (EOI)

Separate Expression of Interest (EOI) is invited for following equipments required in Physics Research Labs.

1. PROFILOMETER

(a) A profilometer with thickness measurement capability from subnanometer to fraction of millimetres having subnanometer resolution.
(b) Sample stages and scanning options
(c) Auto operation with software.

2. THERMAL EVAPORATOR

The System can be used for evaporating materials such as metals, alloys, oxides and if necessary ceramics. Substrate sizes of 4 inch diameter. Multiple sources with an option of co deposition. High vacuum system.

3. DC & RF MAGNETRON SPUTTERING UNIT

The System can be used for sputtering metals, oxides, reactive sputtering. High vacuum systems. Multitarget. Substrate sizes of 4 inch diameter. Compatible power supply and operating systems.

4. FOUR PROBE AND HALL EFFECT MEASUREMENT SYSTEM WITH TEMPERATURE RANGE 4 K – 350K

Electronic characterization of materials which includes insulators, semiconductors, nanomaterials, multilayer structures, superconductors etc.

System cable of making multi-sample measurements say, 4 samples consecutively, without hardware change.

An ac field measurement option for measuring low mobility samples.

5. FT-IR SPECTROMETER

Fourier Transform Infra Red (FT-IR) spectrometer including various accessories such as high temperature units, cooling units, gas controlling and monitoring units, along with suitable IR sources to cover the NIR/MIR/FIR range.

6. MICRO RAMAN SPECTROMETER

Inclusive of limited confocal microscope with objectives, detectors, software, triple laser sources and its accessories. The system will be used to analyse the structure of polymers, composites and carbon-based materials.

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7. OPTICAL MICROSCOPE

Optical Microscope with various magnification options, scanning options, sample of various sizes, fluorescence, polarization and phase contrast microscopy options.

8. UV-VIS SPECTROMETER

System with wavelength ranging from 250mm to 1100mm and extendable to 1800mm with additional grating.

9. FLOURIMETER

System with wavelength ranging from 300mm to 1100mm and extended region till 1800 mm. It will be used to study Solid and liquid samples. Integrating sphere, electroluminescence and photoluminescence measurement options are needed.

10. PORE SIZE ANALYSER

Fully automated Pore size Analyzer. The instrument should be capable of analysing atleast two samples of powder nature simultaneously and determining surface area, pore size and pore volume distribution, isothermal heats of absorption etc, using a variety of coolants and absorbates for a wide variety of sample types.

11. LOW TEMPERATURE FIELD SWEEP NMR (NUCLEAR MAGNETIC RESONANCE)

For studies on solid state materials including their NMR spectra, spin-lattice and spin-spin relaxation times as a function temperature, magnetic field and frequency etc. The experimental setup will have the following three components.

(a) Helium-4 cryostat with field sweep superconducting magnet
(b) NMR Spectrometer
(c) NMR probes of different frequency ranges.

Interest can be expressed for **one or more** of the components listed above. The communication and control protocols used by each of the components must be based on open standards through standardized interfaces so as to ensure interoperability and seamless integration of the components. Integration and supply of comprehensive control and data acquisition software will be in the scope of the supplier for item (b), the NMR spectrometer.

A non-exhaustive list of desirable features for each of the components are follows:

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(a) Helium – 4 Cryostat with field sweep Superconducting Magnet

(i) Top loading liquid helium cryostat with integrated Variable Temperature Insert (VTI), Dynamic (Helium gas flowing in the sample space) VTI, Variable temperature range : 1.6 K to 300 K with good stability, automatic temperature control, and other accessories.
(ii) Superconducting magnet: 9T field sweep programmable magnet, Homogeneity better than 10^{-4}, complete diode protection for the magnet, Persistent current switch, high stability in the persistent mode, bi-polar superconducting magnet power supply.

(b) NMR Spectrometer and its Components

(i) Single resonance NMR Spectrometer with inbuilt tuning and matching option for frequency and impedance, Transmitter frequency range: 5 MHz to 400 MHZ or wider, Digital Receiver, Signal Averager and Pulse Programmer, Software with site license which can be synchronized/integrated with the sweeping of a magnetic field, RF Power Amplifier (RF pulse power: ≥ 1000W), Preamplifier, Power cables, Transcoupler switch with >1kW power handling capabilities, RF double shielded cable kit etc.
(ii) Vector Network Analyser for Probe Tuning and Matching
(iii) Bi Directional coupler 1MHz-1GHz.
(iv) Mixed Signal Oscilloscope
(v) Two-Way RF switch with appropriate connectors suitable with 1 kW pulse RF power and 5-400 MHz frequency range
(vi) Fixed attenuator for NMR Power measurements : Pulse power:1 kW
(vii) Rotary attenuator 1-30 dB: 1 dB steps

(c) NMR Probes (3)

Three probes, tailored to the cryostat dimensions and compatible with the spectrometer with frequency ranges 2-20 MHz, 20-70 MHz, and 70-150 MHz, respectively. Each probe should have a Cernox temperature sensor. Operative temperature range for each probe is 1.6 K to 310K. Each probe should have variable capacitors for tuning and matching functions and different RF coils which should be interchangeable by user. Nonmagnetic capacitors and resisters for making the tank circuit are also needed.

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TERMS & CONDITIONS:

1. **Separate EOI shall be sent for each item.**
2. **EOI shall contain profile of the company, details of the product and other necessary inputs.**
3. **List of Institutions in India (with contact name and telephone of the end users) where similar equipments are supplied by those who respond to this EOI.**
4. **EOI shall be sent to the OIC (Purchase & Stores), IISERTVM at the above address in sealed cover/packets superscribing Adv.No. IISER/P&S/EOI/07/13 Sl.No. and name of the Equipment and the due date (31st December 2013 - 3PM).**
5. **Shortlisted sources may be invited for a presentation/ discussion at a later date.**

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