INDIAN INSTITUTE OF TECHNOLOGY ROPAR, RUPNAGAR-140001 (PUNJAB)
DEPARTMENT OF MECHANICAL ENGINEERING

Dated: 30-11-2009

SUBJECT: N.I.Q. for purchase of scientific equipments

Sealed quotations are invited for the purchase of the following items. The equipments are to be installed at IIT Ropar (Roopnagar) Punjab. Delivery of the equipments shall be required within 1-2 months of placement of the purchase orders. The quotations should reach in the office of Dr. Harpreet Singh (Room No. 208, Mechanical Engineering Department) latest by 3:00 PM on December 23, 2009. The firms are requested to send offers for Technical and Commercial bids separately

1. Scanning Electron Microscope alongwith Energy Dispersive Spectroscope (SEM/EDS) : One (1)

Resolution	3.0 nm or better with LaB6
Operation	High and variable pressure modes
Accelerating Voltage	200V to 30kV
Probe Current	Range 1pA to 2 uA or more
Magnification	Minimum 10x to 3, 00,000x or better
Electron Source	Tungsten filament and LaB6
Vacuum System	Should give ultra clean high vacuum using Turbo Molecular Pump. Safety measures for electron column against any vacuum failure. Variable pressure range for chamber must be at least 270 Pa in low vacuum mode.
Stage Specification	5 axis motorized stage with movement facility for X = 80 or higher mm, Y = 90 mm or higher, Z = 5 – 30 mm or higher, Tilt = 0 to 90°, Rotation = 360°, Manual Joystick to adjust stage movement should also be included Large size chamber with atleast 7 accessory ports; Should be able to accommodate samples of size up to 150 mm dia or more, Height: 75 mm or better, facility to accommodate multiple specimens
Detectors	1. Secondary Electron Detector for use in high vacuum mode 2. Solid state Back Scattered Electron Detector in all modes for use in high & low vacuum mode
EDS System	129 ev resolution Peltier Cooled (LN2 free) EDS, should be able to provide all commonly used tools such as Quantitative, Qualitative, Elemental mapping, Linescan capabilities. Standard calibration samples should also be provided. Should be able analyze Boron to Uranium elements
Automation and Computer Control	Fully automated operation through latest and state-of-the art system software providing various image processing and measurement features, including • Auto gun control and gun alignment, auto bias and auto saturation of gun condition • Automatic / manual control of other features like focus,

	brightness and contrast etc.
Computer System	High-end Computer system with state-of-the-art hardware including color laser printer. Two computers may be quoted for SEM and EDS systems separately. Preferably the EDS system should also be embedded in the SEM computer.
Accessories	Mention all the commonly used accessories with individual prices such as high quality camera, gold sputter coater, Interface between SEM and EDS, Dessicator for reducing water content of vent air
UPS	Higher capacity UPS with atleast 60 minutes backup time as needed to support the complete system inclusing SEM, EDS or any other accessories
Spares	For an anticipated period of three years, O rings for the Vacuum system, Rotary Oil, Tungsten Filament, and LaB6 Filament, any other spares needed should also be quoted
Installation	The equipment should be installed by certified engineer of the firm
Warranty	Three years from the date of installation
Operator	The supplier will have to provide a highly skilled full-time operator for the SEM/EDS system for atleast three years from the date of installation of the system in the institute at ITS OWN COST. The operator shall work as an employee of the supplier, and the Institute shall bear no responsibility for his/her service liabilities
Training	Atleast 2 days preliminary training to 2-3 Scientists/Faculty members of the institute with regard to operation and maintenance of the equipment, alongwith continual on-line help
Maintenance	Annual Maintenance Contract (with spares) for two years after expiry of Warranty period
Heating and Cooling Stage	Heating and cooling stages with temperature range should be quoted as an option
EBSD	Should be quoted as an option

2. X-Ray Diffractometer : One (1)

Basic Requirements

1. High Resolution Goniometer having Theta-Theta Vertical Geometry, minimum selectable step size need to be 0.0001 deg 2 Theta. System for texture and residual stress measurement may be quoted separately
2. High Frequency 3 KW generator for high stability and fast switching
3. Cu-anode X-ray tube with 60KV, 50 mA or better of suitable wattage
4. Modular optics, Primary Monochromators, Ni Beta filter, Programmable slits (incident & diffracted), symmetric & asymmetric illumination provision for slits, diffracted beam monochromator for Cu, or equivalent
5. Scintillation Counter Detector and High Sensitivity Solid state Detector for fast analysis. Both the detectors should be capable of measuring low angle scan from 0.4 degree two Theta onward
6. Easy sampling replacement and alignment. Sample Stage preferably should be such that all the above applications can be done without changing the stage
7. Software for Powder Data/simulation, SAXS, ICDD database and Rietveld Refinement
8. All supporting accessories like Branded Water Chiller, UPS for power backup, Computer with TFT Monitor and Laser printer

9. The quoted items should be capable of future up-gradations
10. The supplier will have to provide a highly skilled full-time operator for the XRD system for atleast three years from the date of installation of the system in the institute at ITS OWN COST. The operator shall work as an employee of the supplier, and the Institute shall bear no responsibility for his/her service liabilities
11. Atleast 2 days preliminary training to 2-3 Scientists/Faculty members of the institute with regard to operation and maintenance of the equipment, alongwith continual on-line help
12. Warranty: Three years from the date of installation
13. Annual Maintenance Contract (with spares) for two years after expiry of the Warranty period
14. For an anticipated period of three years, spares needed, if any should also be quoted

Optional:

1. Heating and cooling reaction chamber for X-ray diffraction experiments from -100 degree Celsius to +1200 degree Celsius or better
2. Sample holder for nano crystalline powder

Terms and Conditions:

1. The equipments should be supplied and installed at IIT Ropar (ROOPNAGAR) Punjab
2. Both the equipments may need to be shifted to new campus of IIT Ropar within three years of installation. The Suppliers should ensure that they could provide all the technical support for re-location of the equipments
3. The prices quoted should be inclusive of all taxes and CIF IIT Ropar
4. The quotation received after due date will not be considered
5. The Institute reserves the right to reject any quotation without assigning any reasons
6. The suppliers MUST support the quoted specifications with the help of original printed manuals of the equipments
7. The payment terms should be specified in the quotation clearly
8. The suppliers may mention any number of optional accessories in their quotes; however the same should be clearly distinguished from the main requirements alongwith their individual prices

(Dr Harpreet Singh)