

DEPARTMENT OF CHEMISTRY
INDIAN INSTITUTE OF TECHNOLOGY - DELHI
HAUZ KHAS, NEW DELHI - 110016

Dated: 2nd March 2012

NOTICE INVITING QUOTATIONS

Sub: Purchase of Benchtop SEM/TEM

Sealed quotations in *separate envelops of technical and commercial bid* kept in a one sealed outer envelope are invited for purchase of a **Benchtop SEM/TEM** as per specifications given below. Your sealed quotation should reach latest by 5 PM on 30th August 2013 to **Dr Sameer Sapra, Department of Chemistry, Indian Institute of Technology – Delhi (IIT Delhi), Hauz Khas, New Delhi - 110016**. Your quotation should be superscribed “Purchase of **Benchtop SEM/TEM** due on 30th August 2013”.

SPECIFICATIONS

Multi-modal imaging system should include TEM, SEM, ED, STEM modes for observation of ultra-small structure, nano particles, surface details and diffraction patterns. It should be able to work without compressor and cooling water supply.

Technical specifications

Nominal accelerating voltage	5 Kv
Electron source	field emission gun
Beam current	5-10 μ A
ELECTRON OPTICS	No cooling water required

CONDENSER LENS

Focal length*	3 to 5 mm
The smallest illuminated area	100 nm
Condenser aperture	small

PERMANENT MAGNET

OBJECTIVE LENS

Focal length*	1 to 2 mm
Cs (spherical aberration coefficient)	less than 2 mm
Cc (chromatic aberration coefficient)	less than 2 mm
Objective aperture	less than 50 μ m

PERMANENT MAGNET

PROJECTION LENS

Magnification on the YAG screen	30 to 500 X
Electron Gun	CE Cathode ZrO/W[100]
Current density	less than 0.2 mA

ELECTROSTATIC

	30 to 500 X
	CE Cathode ZrO/W[100]
	less than 0.2 mA

Lifetime > 2,000 hours

IMAGE CAPTURE

Camera 2 K cooled progressive- scan interline CCD sensor
(7.4 μm x 7.4 μm pixel size)

Pixel size 2048 x 2048 pixels, 12 bits digitalization

Image software image progressive procedures, such as summing, FFT, histogram, Gamma correction, and automatic contrast adjustment, Pixel size should be 7.4 x 7.4 μm

IMAGING MODES

TEM MODE

Accelerating voltage 5kV electron source should be of contrast of light elements in natural states (with unstained sample)

Resolving power 2.5 nm

Total magnification 1,500 – 150,000x

Beam spot 100 nm (diffraction mode)

SEM MODE (BSE DETECTOR)

Operating voltage 5kV

Electron resource Field emission gun

Resolving power 4 nm

Min.magnification (200X200 μm)X800

Max. magnification 800,000x

Beam spot 2 nm

BUILT IN ED

Minimum probe size 100 nm

Diffraction lens Magnification 3.5

VACCUM

Airlock System

Diaphragm and turbomolecular pump 10⁻⁵ mbar

OBJECT SPACE

Ion getter pump (10⁻³ sec) 10⁻⁸ mbar

ELECTRON GUN

Ion getter pump (7 | sec -1) 10-9 mbar

Necessary pc, consumables & manual tool should be supplied with system

STEM

Resolving power **2.0nm**
Minimum magnification **(25 X25 µm) 6,000X**

Tilt **+/-22 deg**

TERMS AND CONDITIONS

1. Please submit the TECHNICAL and FINANCIAL bids in separate sealed envelopes. Mark the two envelopes clearly as "Technical Bid" and "Financial Bid". Both the sealed envelopes should be sent in a single sealed envelope, clearly marked as "Quotations for Purchase of benchtop SEM/TEM due on 30th August 2013". The quote should reach the following address on or before 30th August 2013, upto 5 PM.

Dr. Sameer Sapra
Department of Chemistry
Indian Institute of Technology Delhi (IIT Delhi)
Hauz Khas, New Delhi-110016

2. Please quote prices at FOB New Delhi, inclusive of installation charges. CIP charges should be quoted separately.
3. The quotations should be in the currency of the country of origin as well as Indian Rupees wherever possible and should be valid for at least six months.
4. Please attach all the technical literature and a list of similar installations done in India.
5. Standard warranty details (**minimum 3 years**) should be provided.
6. Payment should be through irrevocable letter of credit.
7. If the quote is being submitted by the representative of the Principals/manufacturer themselves, a valid Agency ship/Dealership Certificate authorizing the agent to quote to IIT Delhi on behalf of the Principals should be enclosed.
8. Complete set of manuals for the operation of equipment should be given.
9. Clearly specify the installation requirements—such as space, power, frequency, environment (Temperature and humidity) etc.
10. If the items quoted are proprietary in nature, please enclose proprietary certificate from the principals stating "certified that _____ is a proprietary item M/s. _____ and no other manufacturer makes these items.
11. If the bidder is an Indian agent, the agency certificate should be enclosed.
12. Please produce compliance certificate for the specification.
13. Training should be provided free of cost.
14. Delivery period should be specifically mentioned and should be as small as possible.

15. The products will be used for educational purposes. Hence any applicable institutional discounts should be offered and stated.
16. SALES TAX :ThisInstitute is not exempted from the payment of Sales Tax/Service Tax/VAT. The rate (i.e. percentage ofSales Tax should be clearly indicated included or excluded) wherever chargeable.
17. Institute reserves the right to accept or reject any or all the quotations without assigning reasons thereof.