Detail Specification

Scanning Electron Microscope with WDS (Qty: 1 Unit)

The Scanning Electron Microscope should be suitable for secondary electron and backscattering electron imaging along with both Energy Dispersive X-ray Spectroscopy (EDS) and Wavelength Dispersive X-ray Spectroscopy (WDS) for quantitative mineral composition/

Sr.No.	Description	Values
1	Electron Gun	W filament, Fully automatic Gun alignment , Gun adjustment etc.
2	Resolution	High Vacuum Mode: 3.0 nm (30kV) 15.0 nm (1.0Kv)
3		Low Vacuum mode: 4.0 nm (30 KV BED)
4	Direct Magnification	X 5 to x 300,000 (defined with a display size of 128 mm x 96 mm)
5	Displayed magnification	X 14 to x 800,000 (on the monitor) (Defined with a display size of 358 mm x 269 mm)
6	Accelerating Voltage	Maximum accelerating voltage not less than 30KV
7	Probe current	1 pA to 1μP
8	Low Vacuum pressure adjustment	10 to 650 Pa
9	Objective lens aperture	3-stage with XY fine adjustment function
10	Automatic function	Filament adjustment, Gun alignment, Focus / stigmator /Brightness / contrast
11	Specimen stage	• The SEM stage should be fully motorized computer controlled 5 axis stage (X,Y,Z, Rotation and Tilt) • large eucentric type X:125 mm Y: 100 mm, Z: 80 mm, Tilt : -10° to 90° rotation 360° • Should have capability to hold sample holders of various size • Maxium specimen size 8 inch diameter specimen

12	Sample type	Rock Samples, Thin sections, metals, powder samples etc.
13	Montage Function	• Built-in
14	Measurement position coordinate	• 203 mm dia
15	SEM Chamber	• Large chamber to accommodate large samples. • A warning alarm system when sample or sample holder touches any part of the chamber • An infrared CCD camera for live chamber viewing
16	Vacuum system	• Fully automatic, Quick Vacuum system with minimum time from cold start up • Clean vacuum system to avoid contamination
17	Detectors	The sem must be equipped with the following detectors • Secondary electron (SE) detector • Cathodluminescense (CL) detector • Backscattered electron (BSE) detector • Energy Dispersive X-Ray (EDS) detector • Wavelength Dispersive X-Rays (WDS) Detector Provision of Electron Backscattered diffraction detector **(EBDS)** for future up gradation
18	EDS Detector	• Liquid nitrogen Free silicon drift detector with at least 20 mm^2 active area • The range of elements detection from Beryllium (Be^4) to Uranium (U^{92}) • The system should be capable of providing EDS spectra quickly and effectively and to automatically scan for all elements in the periodic table and to provide quick qualitative and quantitative analysis • EDS should be capable of performing elemental mapping, line scan, point scan, area scan, multipoint analysis etc.

		• Low energy optimized Xsense Parallet Beam WD spectromter • Energy range 75 eV – 3600 eV • Set of five diffracting crystals (2d= 200,80A and 60A multilayer analyzers, TAP and PET crystals) mounted on six position turret1 • Detectable element range C ^{6} to U ^{92} • Sophisticated auto aligning optical system: 3 axis (H,V,L) fully motorized precision optic positioning stage with [-1,1] mm (H) , [-1,1] mm (V) and [-2,2] mm (L) setting range and optic retraction capability. • Pressure controlled P10 flow proportional counter (FPCC) with ultra-thin polymer x-ray window
19	WDS system	• Integrated FPC gas management system • 4.6 eV (FWHM) or better Si-Kα resolution (PET,SI sample at 2 KCPS) • Weight:19 kG • Pressure regulator for P10 gas mixture (90% Argon / 10 % Methane). **Software feature:** Automatic optic alignment featuring fast and precise alignment modes Automatic selection of diffracting crystal Automatic setting of optimum FPC detection parameter Acquisition of free range and peak energy scan, peak/background with optional peak search WDS standard base quantification, couple with WDS/EDS quantification Mapping of peak count rate (W or W/o background correction) in beam map, stage map, sub map, mapping modes

20	PC interface and software	• All microscope function shall be controlled by a latest PC (with best possible specification) running on windows platform. A support computer must also be provided. • The SEM shall have automated operation for all the electron optics and features.
		• All essential software for image and data analysis for all the attached detectors must be included. • For ease of use, the system should be equipped with maximum automated operation like auto focus, auto contrast and brightness, auto stigmator etc • Printer HP color Laser jet • LED monitor minimum 24"
		Software for Mineral analysis/identification compatible with SEM along with required mineral data base
21	Imaging	• The microscope should be equipped with latest and maximum digital image storage capability for best imaging • Possibility to archive digital images TIFF,JPEG,BMP,GIF and other image formats
22	Coating unit	• Auto fine coater • Carbon coater (included carbon rod/20 sets)
23	UPS	A compatible UPS with maximum possible backup must be included in the SEM system
24	Operation table	Suitable Operational table for SEM
25	Voltage regulator	Best Suitable voltage regulator

26	Installation and training	• Delivery and installation of the system will responsibility of the supplier • The supplier will provide complete onsite training of operation, Diagnostic , services and Application to the three (03) scientists/ engineers abroad at manufacturer facility prior to installation of the system at user's facility • The Purpose of this training is to ensure that the trained people will: ❖ Work Safety ❖ Be able to use properly equipment and software ❖ Be able to obtain the best result possible with standard equipment
27	Warranty and support	• A comprehensive Five (05) years warranty must be included with the system (03 years with parts & 02 years' service warranty) • The period of the warranty shall begin upon full installation and acceptance of system An agreement with the manufacturer to supply support and necessary spare parts or suitable replacement or up gradation for the supplied equipment at reasonable price for a period of ten (10) years from the delivery of the system
28	Documentation	• Complete manuals of operation, service and diagnostic (hard &soft copy) (English) • User manual of all the software related to the equipment (English)
29	Spares	• Filaments (Qty=200) • Carbon rods (Qty=20) • Adhesive tape (Qty=10) • Silver paste (Qty=05) • Fuses, O-rings (Qty=etc) • Other necessary (Qty=consumables)
30	Make	• Japan, European, or Korea
31	Optional *	• EBSD detector • Field emission electron gun • Automatic Gold Coating unit

* The price of optional items must be quoted separately.