

APS University,Rewa(MP)486003

Tender no : Registrar/Physics/2011/119

dt 22/12/2011

1. Tender Notice :
2. Format for Tender Certificate(Part I):
3. General Terms & Conditions (Part II) :
4. Techno-Commercial Bid (Part III) :
5. Price Bid (Part IV) :

You are requested to return Part I, Part II and Part III duly completed in one envelope, and marked as **Techno-Commercial Bid** and Part IV duly completed and marked as **Price Bid** in another envelope. The two envelopes are to be addressed to The **REGISTRAR, APS UNIVERSITY,REWA (MP)** and marked with our tender enquiry no, due date and opening date on each envelope with your stamp as sender. The two envelopes may be put in one envelope and addressed to the **REGISTRAR, APS UNIVERSITY,REWA (MP)** and marked with our tender enquiry number and due date and opening date on each envelope with your stamp as sender. This envelope may be sent **by post to REGISTRAR, APS UNIVERSITY,REWA (MP)486003 before due date and time.**

Note – Non-compliance of the above may disqualify your offer for consideration.

Format for Tender Certificate(Part I)

Tender Reference No:

REGISTRAR

APS UNIVERSITY

REWA(MP)486003

I/We agree to furnish required instruments as detailed in the Techno-Commercial Bid (Part III) or such portions thereof as you may specify in Acceptance of Tender/Supply Order at the prices given in the Price Bid (Part IV) in accordance with the General Terms and Conditions (Part II) governing the contract/supply order enclosed here to duly accept on receipt of order for the same I/We agree to hold this offer open untiland shall be bound to supply/commission/install the equipment and dispatch the same within the specified period. I/We agree to supply and commission/install the equipment and complete the whole of the work and hand over to the purchaser within the period of weeks, from the date of receipt of an intimation from you regarding acceptance of this tender/receipt of supply order.

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Signature of Tenderer

With Office Stamp

Station :

Date :

Name :

Address :

Contact No.

e-mail :

GENERAL TERMS AND CONDITIONS FOR TENDER (PART II)

1. Preparation of Tender:

(i) The complete tender form should be returned intact whether you are quoting for any item or not. Page should be detached but when items are not being tendered for,

the corresponding space should be defaced by mentioning “not quoting”.

(ii) In the event of space on the tender form being insufficient for the required purpose, additional pages may be added. Each such additional page must be numbered consecutively, should bear the tender reference number and be fully signed by you (the supplier). In such cases reference to the additional pages must be made in the tender form.

2. Signing of Tender:

(a) The tender is liable to be ignored if complete information is not given therein regarding the particulars, data, specifications asked for in the techno-commercial offer (Part III) at Schedule of Requirements. Specific attention should be paid to the delivery dates, technical specification, and also the general conditions of contract in Part II and other conditions mentioned at Part III and Part IV.

(b) Individual signing the tender or other documents connected with a contract must specify whether he signs as:

(i) A “**sole proprietor**” of the firm or constituted attorney of such sole proprietor.

(ii) A partner of the firm if it were a partnership, in which case he must have authority to refer to arbitration disputes concerning the business of the partnership either

by virtue of the partnership agreement or a power of attorney.

(iii) Constituted attorney of the firm if it is a Company.

NB:

a. In case if (ii) above a copy of the partnership agreement or a general power of attorney and in either case attested by a Notary Public, should be furnished to this, or an affidavit on stamped paper of all the partners admitting execution of the partnership agreement or the general power of attorney, should be furnished.

b. In case of partnership firms, where no authority to refer disputes concerning the business of the partnership has been conferred on any partner, every partner of the firm must sign the tender and all other related documents.

c. A person signing the tender form or any documents forming part of the contract on behalf of another shall be deemed to warranty that he has authority to bind such other and if, on inquiry, it appears that the persons so signing had no authority to do so, the purchaser may, without prejudice to other civil and criminal remedies cancel the contract and hold the signatory liable for all costs and damages.

3. Delivery of Tender: The original copy of the tender form is to be enclosed in two separate envelopes, the envelope containing Part I, II and III and marked as “**Techno-Commercial bid**” and another envelope containing only part IV marked

as “**Price bid**” . The two envelopes should be sealed and should bear address of the office, **tender enquiry no, due date and time**. The two envelopes should be put in one envelope and addressed to **REGISTRAR, APS UNIVERSITY REWA(MP)486003** marked with our tender enquiry number and due date. **Right is reserved to ignore any tender who fails to comply with the above instructions.**

Bidder: Tenders are invited only from **Original Equipment Manufacturers** OR their **authorized distributors/ dealers**, Vendors are requested to **attach proof** to show that they are the authorized dealers of the brand that they are quoting for the manufacturers of the product.

Quotations of internationally recognised brand from authorized dealers only will be accepted.

. Tender Documents downloaded from university website www.apsurewa.ac.in should be submitted along with a Demand Draft of **Rs.5000/-** as cost of tender documents,. **Demand Draft should be enclosed with Techno-Commercial Bid.**

Earnest Money and cost of tender document - may be submitted in the form of Demand Draft from any **Nationalized Bank drawn in favour of Registrar, APS UNIVERSITY payable at REWA (MP)**.

Bids received without EMD and cost of document will be rejected.

4. Latest Hour for Receipt of Tender: Your tender must reach this office not later than **1300 hrs** on the due date. Tenders sent by hand should be **submitted in the office of REGISTRAR/submitted by post to REGISTRAR,APS UNIVERSITY,REWA(MP) not later than 1300 Hrs.** on the due date unless otherwise mentioned.

5. Period for which the offer will remain open:

(i) Firms tendering should note the period for which it is desired that their offers should remain open for acceptance. If the day up to which the offer is to remain open is declared a holiday for Govt. offices, the offer shall remain open for acceptance till the next working day.

(ii) Quotations qualified by such vague and indefinite expressions such as “subject to immediate acceptance”, “subject to prior sale”, etc will not be considered.

6. Opening of Tenders: The firm shall be at liberty to be present or authorize a representative to be present at the opening of the tender at the time and date as specified in the schedule. The name and address of the representative who would be attending the opening of the tender on behalf of the firm should be indicated in the tender. Please also state the name and address of firm’s permanent representative, if any. Generally, the techno-commercial offer will be opened on the day specified for opening.

7. Right of Acceptance: This office does not pledge itself and reserves to itself the right of accepting the whole or any part of the tender or portion of the quantity offered and the firm shall supply the same at the rate quoted. The firm shall be at liberty to tender for the whole or any portion or to state in the tender that the rate

quoted shall apply only if the entire quantity is taken from the firm.

8. Items supplied are subject to inspection and acceptance and the supplier should collect/ replace the rejected items at his cost and risk.

9. Delayed supplies: In case of delayed supplies, liquidated damages at the rate of **0.5 percent per week** of delay with a maximum of **5 percent** will be levied. In case of further delay the institute shall cancel the P.O. at its own discretion.

10. Registration: Registration with any University/ IIT/National Scientific Laboratories is mandatory. In case a bidder is not registered the bidder must be **OEM/Sole distributor in India of OEM**. Registration implies having provided equipment to any IIT/University/National Scientific Laboratory.

Proof of registration OR OEM certificate/ sole distributorship certificate MUST be attached.

11. No correspondence/discussion/visits whatsoever will be entertained on the subject unless specifically called by this office after opening the tenders for technical discussions/ price negotiations. Any violation of this will render the quotations invalid and the firm is liable to be blacklisted.

12. Registrar reserves the right to call for techno-commercial/price negotiations. The company should depute competent representative for such discussion/ negotiations whenever called for and he shall be competent to take on the spot decisions.

13. The firm may give any of their commercial term, if required, in their techno-commercial offer only, and price quotation should contain only price.

14. Please inform the Registrar in writing whether the owner of the firm or any of their partners/employees has close relations working with APS University. This is for record only.

15. Office stamps of tenders must be affixed below their signatures.

REGISTRAR
APS UNIVERSITY,REWA

TECHNO-COMMERCIAL BID
Part III

1. Tender reference No. :
 2. Name of tenderer :
 3. Due date & time :
 4. Opening date & time :
 5. The tender shall remain valid for acceptance for 120 days, from the date of tender opening.
 6. Amount of EMD Rs.50,000/- DD No. _____ dt. _____
- Note:** EMD should be enclosed along with the Price Bid.
7. Schedule of Requirements:

Sl.NO.	Description & nature of Equipment	Qty Required	Place & dates on which delivery is to be made	Specifications (Attach additional sheets. Drawings etc. if necessary)
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CONDITIONS FOR TECHNO-COMMERCIAL BIDS

TECHNICAL

1. Give brief description of item/equipment/material with accessories. Items offered should conform to BIS (ISI) specifications or as explicitly stated. In case specifications offered are different, separate comparative technical specifications sheet shall be attached with details such as Sl.NO, specifications offered deviations if any, and remarks. Any product brief, test certificates available may be enclosed.
2. List of spares, if applicable should be attached.
3. Any optional, if offered, be provided with their full technical details including their use and advantage.

COMMERCIAL

1. The normal payment terms are 100% payment after inspection, installation and acceptance of stores at APS University, Rewa. Payment terms in case of imports are 100% payment through **LETTER of CREDIT**, 90% being paid after submission of original documents and remaining 10% after satisfactory installation and commissioning of instrument.
2. Give details of installation and commissioning except price which will be only in price bid (if applicable).
3. Warranty required is atleast **3 years** for all the products supplied.
4. Delivery desired is within **90 days** from the date of releasing the supply order. Specify your delivery period.

5. In case of delayed supplies, liquidated damages at the rate of **0.5 percent per** week of delay with a maximum of **5 percent** will be levied.
6. Vendors should submit **10% of the order value** as **performance bank guarantee** in favour of **Registrar, APS University, Rewa** for the duration of warranty/guarantee period before release of final payment.
7. Delivery : APS University, Rewa (MP).
8. Indicate mode of dispatch. Rail/Road/ Air/ Sea.
9. In case equipment offered requires maintenance after the expiry of the warranty, please indicate approximate cost of comprehensive and on call basis maintenance and also availability of local support or otherwise.
10. Please note clearly that faxed quotation is liable to be rejected.

(Signature of Tender issuing authority)
REGISTRAR
APS UNIVERSITY, REWA

Tender Reference No. :
Full Address :
Fax :
Signature of Tenderer:
Name in Block Letters :
Station : Office
Stamp :
Date :

**PRICE BID
PART IV**

1. Tender reference No. :

2. Name of tenderer :

3. Due date & time :

4. Opening date & time :

5. The tender shall remain valid for acceptance for 120 days, from the date of tender opening.

6. Amount of EMD Rs. _____ DD No _____ dated _____
Bank: _____.

7. Rates for items given in Techno-commercial offer at Schedule of Requirements are as follows. Adhering to the format given below is a Pre-requisite for considering your quotations:

Sl. No.	Description	A/U	Qty offered	Unit price	Total cost (Rs.)
(i)	Brief description, basic price without duties if any, of complete quipment/item/ material with all accessories.				
(ii)	Customs duty, if any				
(iii)	Excise duty				
(iv)	VAT/CST				
(v)	Installation & commissioning cost, if any				
(vi)	Training cost, if any				
(vii)	Total cost (in figures & words)				
(viii)	For octroi if applicable, necessary, certificate will be issued				
(ix)	Any other				

Note : Separate list should be attached where required in the same format giving details of each item and cost. However, total cost must be mentioned at Sl.No.7(vii) above

OTHER CONDITIONS FOR PRICE BIDS

1. No unilateral revision in price will be admissible.
2. Rates should be quoted in the accounting units (A/U) mentioned in this enquiry.
3. Any optional indicated in techno-commercial bids must be priced separately.
4. In case spares/accessories are applicable, their list and price should be clearly indicated separately.
5. The price must be stated for each item separately. The percentage of reduction, in the unit price should also be quoted, should an order to that extent be placed with you.
6. Payment terms in case of imports are 100% payment through **LETTER of CREDIT**, 90% being paid after submission of original documents and remaining 10% after satisfactory installation and commissioning alongwith submission of performance bank guarantee..

(Signature of Tender issuing authority)
REGISTRAR, APS UNIVERSITY
REWA

Tender Reference No. :
Full Address :
Fax : Signature of Tenderer :
Name in Block Letters :
Station : Office Stamp :
Date :

SPECIFICATIONS

FT-IR System Specifications

System Optics

1. The **sealed and desiccated** spectrometer must be equipped with CaF₂ coated KBr sample compartment protection windows. The desiccant canisters must be rechargeable and accessible with no need to open the spectrometer. The system must have a humidity indicator inspection window. The instrument must be equipped with internal layout for optional purge operation.
2. **Interferometer** must be a dynamically aligned, frictionless Michelson design. The velocity must provide collection capabilities of up to **40 spectra independently archived, per second**, at a spectral resolution of 16 cm⁻¹. This scan speed allows rapid scan kinetic studies like UV-curing. The interferometer must be capable of **spectral resolution better than 0.4 cm⁻¹** (not apodized – boxcar) and the spectrometer must have a motorized aperture at the source, for optimal peak shape collection of data. The instrument must be capable of at least **30.000:1 peak to peak** signal to noise, measured at 4 cm⁻¹ resolution by collecting 80 seconds background, 60 seconds sample, in the region 2200-2100 cm⁻¹, with Strong Beer Norton apodization and no purge. The **wavelength precision** must be within 0.01 cm⁻¹ with no need for software calibration.
3. The interferometer standard beamsplitter must be KBr / Germanium coated, optimized for medium infrared spectral range, and maximum emission range below 2000 cm⁻¹. The **spectral range must be 7800-350 cm⁻¹**. An optional interferometer mounting an extended range XT-KBr beamsplitter with maximum emission range above 2000 cm⁻¹ must be available. The spectral range of this interferometer must be 11000-375 cm⁻¹.
4. The instrument must be equipped with **integrated scan button** panel for at-instrument collection of spectra or SOP execution. The **accessory sample compartment** must have automatic recognition and smart lock-in mechanical design.
5. The **source** must be externally mounted and accessible without opening the instrument cover. The spectrometer must have the **option for a second source** (Tungsten Halogen NIR source) stored in the instrument with no need to open the cover, and source exchange must be achieved externally for quick configuration in the medium or near infrared range.
6. The spectrometer must **include a Performance Verification** motorized wheel. The wheel must provide beam attenuation filters, NG-11 glass for detector linearity test and NIST-traceable 1.5 MIL (38 microns) polystyrene film. The validation wheel must be serialized and labeled with expiration date information.
7. The system must provide an optional **external beam** for additional sampling modules or infrared microscopes capability.

8. The **standard detector** must be a shielded DLA-TGS room temperature stabilized. The spectrometer electronics must be compatible with MCT-A liquid nitrogen-cooled detectors and integrating sphere near-infrared InGaAs room temperature detector.
9. The spectrometer must be compatible with additional **external modules** for permanently mounted TGA-IR interface or FTIR Microscope.
10. The instrument must come standard with **3-years warranty** on infrared source, interferometer and laser. The standard warranty of the complete instrument must be minimum 12 months.

Software

Software must be **Windows XP and Windows Vista-compatible** and must include:

1. Live display **data collection**, parameter set-up and spectral data preview. Customizable toolbar, menu, and options with user logins and password protection. Display capabilities: zoom, roll, stack, overlay, offset and interactive display tools. **Data processing**: baseline correction (automatic and manual), smooth, blank and straight line, first and second derivative, curve fitting, spectral math, subtract (manual and automatic). **Data conversion** and **corrections**: Kubelka Munk, Kramers Kronig, Photoacoustic, Spectral **Search**: high-resolution library generation, customizable information fields, single or multi-region search, library management, with over 850 spectra in included libraries. Spectral peak labeling, audit trail history log, multiple data converters for JCAMP-DX and other vendor's spectral data files and user libraries. Spectral group **statistical analysis**: variance, average, and range. **Peak analysis** tools: peak area, peak height, cursor, annotation. **Automatic atmospheric suppression** to remove H₂O and CO₂ interferences (no standards needed).
2. **ATR correction** including settings for crystal material, reflections, angle and sample refractive index. The ATR corrected spectrum of polycarbonate (the optical side of a compact disc or CD-ROM) collected by using a single reflection diamond ATR, searched against a Hummel Polymers transmission library, must provide a **Search Match value** of at least 95 / 100 units (or 0.95 / 1.0 scale). This capability eliminates the need for dedicated ATR libraries, allowing transmission libraries to be used for any infrared spectral identification (transmission, cells, and infrared microscopes).
3. **SOP workflows** for execution through Integrated Scan Button panel, bar code reader or Toolbar including SOP compiler for routine tasks operations.
4. **Materials QC correlation** with standard and high sensitivity algorithm, with no need for library creation of reference materials. Software must include customizable threshold and Pass / Fail status indicator. The report generated for

each sample measured must be capable of embedding spectrometer and system suitability status, for total confidence on results.

5. **System Performance Verification** for automatic monitoring of system status including: Hardware Diagnostics to ensure key system components are working properly; Performance Verification, based on ASTM E1421, to test and document system operation; System Suitability to ensure analysis consistency, including sampling accessory; Spectral Quality Checks to ensure consistent spectral quality; Scheduled Maintenance monitor with operator warnings when Preventative Maintenance is due.
6. **Quantitative and qualitative** method development and analysis including: Beer-Lambert calibration and prediction (peak height or area integration). Classical Least Squares calibration and prediction. Discriminant analysis, Partial Least Squares (PLS) and Principal Component Analysis (PCR) prediction.
7. Infrared **spectral interpretation** with online interpretation guide.

Optional Sampling Accessories:

FTIR should be optionally quoted with all necessary sampling accessories like

A) Liquid cell for liquid analysis.

B) Attenuated Total Reflectance (ATR) accessory with heating control upto 300 °C for direct solid related sample measurement.

Should be Heatable to 300 C and come with Thermal fuses.

- Should comply with international regulations.
- Should be used for Polymerization studies, • Thermochemical studies, • Curing reactions, • Degradation / decomposition etc.

C) Suitable Branded PC, B/w Laser Printer & Servo stabilizer should be quoted.

Interactive Board with Dual user with fixed Short-throw Projector, Laptop/Desktop and printer

Interactive White board with dynamic and intuitive Dual-User capability.

Size : 78"

Resolution : 12800 x 9200

Screen Formats : 4:3

Pen Internal Resolution: 2730 points (lines) per inch

Pen Output Resolution: 200 points (lines) per inch

Pen Tracking Rate: 200 inches per second providing a fast response to pen commands

Pen Output Rate: 160 coordinate pairs per second (single user) / 80 coordinate pairs per second (dual user)

User Input : Cordless battery-free pen incorporating tip switch and side switch for full mouse functionality

Digitizing Technology : Passive Electromagnetic

Power Requirement : USB powered device

Connection to Computer : USB with supplied 5m (16ft) USB cable

Screen Surface : Low Glare Melamine

Certifications : UL, CE, FCC

Dual User Functionality : Pen: 1 Teacher Pen and 1 Student Pen can be used together in Dual-User Mode when using Board software

Integrated USB Sound : Two integrated slim-line speakers and amplifier (with controls, inputs and outputs) with 20W per channel RMS (<1% distortion), Volume, Bass, Treble, on/off controls,

Fixed Frame Specifications:

ARM: Aluminium arm

Connectivity Panel : Integrated 'power management' system for Activboard and Projector

Projector Specifications

Native Resolution : WXGA (1280 x 800)

Compressed Resolution : up to 1080i

Typical Colours : 16.77 million colors

Brightness (ANSI lumens) : 1600 ANSI (normal), 2000 ANSI (high)

Contrast Ratio : 2000:1

Noise Level : 29dB (normal) 34dB (high brightness mode)

Aspect Ratio : 16:10 (native), 4:3, 16:9

Power Consumption : 240W (<1W standby)

Device Type : DLP Technology

Focus : Manual Focus

Zoom : Digital

Focal Length : 7.27 F=2.86

Projection Distance : 0.54m ~ 1.22m (21.3in ~ 48in)

Projection Screen Size : 1.27m ~ 1.22m (50in ~110in)

Lamp Type : 230W lamp (190~180W)

Lamp Life : 4000hrs (normal) 2500hrs (high)

Keystone Correction : Vertical: max $\pm 15^\circ$

Optional : Laptop/Desktop : Intel Core i5 2.3 GHz, 2 GB DDR3 RAM, 320 GB S-HDD, DVD writer, 15.6" LED Display/Blue tooth, webcam/wireless/ carry case, window 7, antivirus macfree / Norton/ quickheal, license Office 2000 Make : either Dell / HP / Acer/ Lonovo only

Printer : laser B& W Printer make either HP / Samsung only

Scanning Electron Microscope – Specification

Microscope:

Electron Microscope type: Variable Pressure Scanning Electron Microscope

Resolution: 3nm at 30KV (High Vacuum mode) or better
4.5nm at 30KV (Low Vacuum mode) or better

Acceleration Voltage: 200 V to 30 KV

Magnification: X5 to X5,00,000 or better

Detectors: Secondary Electron Detector for use in high vacuum mode
Solid state Back Scattered Electron Detector in all mode for use in high & low vacuum mode

True secondary electron detector in low vacuum mode.
STEM Detector

Variable Pressure Range: 10– 270 Pa or better.

Vacuum System: fully automated turbo molecular pump preferably through the lens differential pumping, Pump capacity and pumping down time from cold start and specimen exchange time to be indicated

Filament: Tungsten filament cartridge hair pin. Provision for LaB6 filament.

Probe current: 4µA or better

Objective lens Aperture: 3 or 4 apertures – movable and adjustable from outside

Specimen Stage Movement: 5 axis motorized stage X= 100 mm or more, Y= 75 mm or more, Z=5-50 mm or more; **Tilt Angle** = - 10 to 90 degree or more **Rotation** = 360° (continuous)

Max specimen size: 200 mm dia or better and 100 mm height or better

Specimen holder: Single specimen holders and multiple sample holders

Cooling Stage: -25 degree to +50 degree.

Correlative microscopy : System should be capable of correlative microscopy including EDS analysis of the Same image for future upgradability.

Control System: PC control

Auto function: Auto Gun Control, Auto Beam Alignment, Auto Focus, Auto brightness and contrast, Auto Stigmator and Auto Focus compensation for probe current variation, auto start, Auto photo mode and full auto mode and Auto axial alignment.

Software feature: multi-user software with GUI, instrument status display, report edition.

Image Display: 2 or 4 Images, should be capable of displaying composition and topography images
Image format – BMP, JPEG, TIFF

Image Resolution: upto 5120 x 3840 pixels or more

IRCCD Camera, control panel for different adjustments (hardware), Joystick

Protection: All components including sub systems accessories and computers should operate on 220 volts, 50 Hz electric power

Computer: Computer with latest configuration (as on date of supply) should be provided with mono laser, printer

Factory training to two persons.

Optional Accessories:

EDS System with LN2 free (SDD) 130 eV Type X-ray Detector for elemental analysis from Be to U and software for qualitative, quantitative, digital x-ray mapping and line scan analysis.

System should be compatible for future upgradation .

Specification for X-ray Diffractometer

Type : Floor/Desk top

X-ray Tube : Copper target with normal focus type,
Max. Power Output 450Wto2KW

X-ray Generator: Tube voltage 60KV,tube current 80mA,Output stability $\pm 0.01\%$ for a line variation $\pm 10\%$ provided with X-ray tube protection against under voltage/over voltage and failure of water supply.

Goniometer : Vertical type, \square -2 \square scanning mode, scanning range- 6° - 163° (2 \square)- 180° - 180° (\square),min.step angle 0.002° (2 \square),angle reproducibility $\pm 0.001^\circ$ (2 \square),scanning speed 0.1° - 50° per min (2 \square),Divergence & scattering slit each 0.5° , 1° , 2° , Receiving slit 0.15mm,0.3mm, slewing rate 1000° per min(2 \square) and fitted with K a Nickel filter.

X-ray Detector : Scintillation counter type preferably NaI, High voltage supply upto 1200V,baseline and window auto control,scaler preset time 0.1-1000 sec.

Attachments for powder, samples should be included with sample holders

Thin film and environmental measurement stages should be quoted optionally.

Chiller cum pump for water circulation is essential.

UPS 15KVA is compulsory.

Personal computer and laser printer of a standard company preferably Compaq make for necessary data processing and printouts.

Prices should be inclusive of sample holders and standard software for X-ray generator control, goniometer adjustment, file maintenance, basic data processing, graphic display, quantitative and qualitative analysis etc.

Optional softwares (ICDD PDF2 search software, crystallite size/lattice

strain & crystallinity calculation software) may also be quoted.

The system should have facility for auto alignment & should have Multi-graded Mirror facility for converting Focusing Beam Geometry to Parallel beam geometry for Thin Film applications as well as uneven samples.

Specification for OPTICAL POLARIZING MICROSCOPE

Type : Upright type with infinity corrected optical system

Stand : with Incident and Transmitted light useful for different materials like ceramic, polymers, composites, bio-material etc. with a variety of contrasting techniques like Bright Field, Dark Field, DIC, Polarization etc.

Illumination : Built-in reflected light Koehler illuminator, 12V 100W long life halogen bulbs and transmitted light 12V 50W.

Objective Magnification : 5x, 20x, 100x corrected for cover-glass and 10X, 50x corrected for use without cover-glass application.

Total Magnification :50x to 1000x

Observation Tube : Siedentopf type wide field trinocular tube with tube inclination 30 degrees & interpupillary distance adjustment from 50 to 76 mm.

Analyzer and Polarizer : For both transmitted and reflected with Compensator Lambda with +/- 8 degree rotary mechanism and DIC Prism.

Focusing : High sensitive focusing knob in 1 μ m increment, focusing stroke 25 mm. Shall accommodate specimen size up to 60 mm height.

Optical System : Shall incorporate universal infinity system for infinity correction. So that no change of magnification occurs when the distance between tube lens & object is changed, total magnification shall remain constant even when prism / slider are inserted between object & tube lens, eliminating comma aberration.

Mechanical Stage : Polarizing rotatable stage with centering function 360 deg. rotatable, lockable in any position

X-Y sample guide : Adjustable with 28mm x 48 mm travel.

Revolving centerable nosepiece : 6 position centerable

Condenser : 0.9 POL

Digital Photomicrography : Microscope Digital camera for photomicrography, shall be custom built convenient & suitable for use with microscope. System should have the camera head connected to Microscope frame using C-Mount adaptor 0.5x . Quality class performance of camera with color fidelity. Outstanding color fidelity by patented online color transformation. Colors are adjusted according to real sample impression.

- Image sensor - CMOS Camera
- Sensor size - ½ inches (4:3)
- Resolution (max.) - 2,560 X 1920 = 5 Mega pixels
- Pixel size - 2.2 X 2.2 µm
- Binning - 2x, 3x, 4x
- Readout speed - 5 MHz – 40 MHz
- ADC - 8 / 10 bit
- Live frame rates - 13 fps at 800x 600
- Data transfer - USB 2.0
- Operating system - MS Windows XP professional (recommended)
- MS Windows Vista 32

Specifications for Diesel generator set

1. Water/coolant 56 BHP @ 1500 rpm directly coupled to 45 KVA 3 PH 415 V 0.8 pF alternator. Both should be mounted on common base and fitted with all standard accessories. Set should be provided with sound proof canopy, fuel tank, antivibration mounting pad, engine safety and protection and battery with leads.
2. Water/ coolant 42BHP @ 1500 rpm directly coupled to 30 KVA 3 PH 415 V 0.8 pF alternator. Both should be mounted on common base and fitted with all standard accessories. Set should be provided with sound proof canopy, fuel tank, antivibration mounting pad, engine safety and protection and battery with leads.