

Request for Proposal (RFP) for Supply and Installation of VUV-NIR (115-850 nm) Spectrophotometer

1. Table of Contents /index:

S.No	Name of the component	No.of Units required
1	VUV-NIR (115-850 nm) Spectrophotometer for transmission, reflection and scatter measurements over the wavelength band 115 nm -850 nm with all required accessories and equipment. (Detailed technical specifications are given Section-6)	1

2. Technical specifications of the VUV-NIR (115-850 nm) Spectrophotometer

Specifications of the light source	
Source wavelength	115 -850 nm (number of sources can be more than 1 two cover the wavelength band)
Source intensity variation/fluctuation	≤0.01% across the wavelength band 115-850 nm over 1 hour operation
Source life time	≥ 1000 hours
Source output window	MgF ₂
Specifications of Source optimizer/ condenser	
Wavelength Range	115-850 nm
Working environment	Vacuum or N2 purged to meet the wavelength requirements
Type	Reflective spherical/aspheric
Reflective coating	Al+MgF ₂
Average reflectivity	> 75 % over the wavelength band 115-850 nm
Source mounting Flanges	Minimum 2 in order to meet the wavelength requirements.
Source mounting Flange windows	MgF ₂ to meet the wavelength requirements
Specifications of the monochromator/spectrometer	
Wavelength Range	115-850 nm
Working Environment	Operation: Vacuum Venting: N2
Wavelength Resolution	≤ 0.1 nm for 1200 lines/mm over the wavelength band 115-850 nm ≤ 0.2 nm for 600 lines/mm over the wavelength band 115-850 nm
Wavelength Calibration Accuracy	≤ 0.1 nm for 1200 lines/mm over the wavelength band 115-850 nm

	≤ 0.2 nm for 600 lines/mm over the wavelength band 115-850 nm
Wavelength Reproducibility	≤ 0.05 nm over the wavelength band 115-850 nm
Grating holder	Kinematic turret with minimum 2 positions
Grating groove density	600 and 1200 1/mm, to meet the spectral resolution requirements
Grating coating	Aluminum with MgF ₂ protective coating
Grating scan/drive type	Stepper motor driven
Drive Step Size	≤ 0.005 nm
Slit type	Precision Bilateral adjustable slit
Slit width range	0.01 to 3 mm
Slit width adjustment mechanism	Micrometer with 10 μ m step size
Slit height range	2 to 20 mm
Slit height adjustment mechanism	Micrometer with 0.1mm step size
Order sorting filters	To cut off the higher order spectral overlap over the wavelength band 115-850 nm
Blocking optical density	OD 4 or better
Mount for order sorting filters	Filter wheel
Filter wheel control type	Motorized with manual override
Specifications of the Collimator	
Wavelength Range	115-850 nm
Working Environment	Operation: Vacuum Venting: N ₂
Type	Aspheric and Reflective
Reflective coating	Al+MgF ₂
Average reflectivity	> 75 % over the wavelength band 115-850 nm
Collimated beam size	Collimated of size ≥ 10 mm x 10 mm or ≥ 10 mm diameter.
Specifications of sample mounting chamber	
Working Environment	Operation: Vacuum Venting: N ₂ purged
Sample size	Up to 50 mm
Sample holder	Should accommodate minimum 6 samples of 25 mm diameter minimum 2 samples of size 50 mm diameter
Sample angle	0 to 60 degree
Specifications of the detector	
Detector type	Suitable to meet the wavelength range, detection limits and measurement accuracies
Detection/measurement limits	Transmissivity 1% -95% or more Reflectivity 1% - 95% or more Over the wavelength band 115-850 nm
Measurement accuracy/uncertainty	Transmissivity $\leq 1\%$ Reflectivity $\leq 1\%$ Over the wavelength band 115-850 nm

Measurement repeatability	Transmissivity $\leq 0.1\%$ Reflectivity $\leq 0.1\%$ Over the wavelength band 115-850 nm
Detection angle	10 to 180 degree, motorized/ manual

Additional Requirements:

- Vendor should provide all interface drawings and product drawings in pdf format along with the technical bid for the evaluation. If the vendor fails to provide this information, it may lead to rejection of the technical bid.
- Based on the total effective volume of the system, the vendor should provide a suitable vacuum pump that reaches the vacuum level of 10^{-6} m bar or better with in 60mins.
- All the necessary controls and gauges for the spectro photometer operation should be provided by the manufacturer.
- The vacuum seal or o-rings should be vacuum grade 10^{-6} mbar compatible.
- All the materials used in building the spectro photometer should be vacuum compatible up to 10^{-6} mbar or better.
- Outer finish/ coatings on spectrophotometer and all auxiliary hardware should be compatible with ISO – class 4 (as per ISO 14644).
- The vendor should provide an integrated control, data acquisition, analysis software and hard ware for reflection, transmission and scatter measurements by using the spectro photometer.
- The vendor should provide price bid with detailed price breakup of individual components.

Scope of the item:

Above mentioned items will be used for the laboratory experiments related to contamination testing of VELC components.

Eligibility criteria of vendor:

- The vendor must have knowledge, experience and infrastructure in design, fabrication and installation of vacuum spectro photometers.
- The vendor should provide the post installation technical support for a minimum period of 1 year from the date of completion of installation.

Expected deliverables:

1. VUV-NIR (115-850 nm) Spectrophotometer that meets all the technical specifications under "**Section-6**" as mentioned in Table of Contents under "**Section -5**".
2. Conformance test certificates for the properties of optics and detectors as per the specifications mentioned in "**Section-6**"

3. Control, data acquisition and analysis software and hardware for both reflectivity and transmissivity measurements by using the spectro photometer.
4. Soft copy and hard copy of all the relevant manuals, soft copy of all control softwares should be supplied by the vendor at the time of delivery.
5. All the necessary controls, gauges, auxiliary hardware and software for the spectro photometer operation should be supplied by the vendor at the time of delivery.

Warranty

- 1 year warranty from the date of installation and acceptance on all the hard ware deliverables
- Software warranty should cover 10 years system software support, update and maintenance

Expected Time Schedule

3-4 months

For any information/clarifications contact the following

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