CSIR- NATIONAL PHYSICAL LABORATORY
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From: Director, CSIR-NPL
Tender No. 14-VI/SPS(1116)22PB/T-69 Dated: 25.08.2023

CORRIGENDUM

With reference to NPL's Global Tender ID: **2023_CSIR_721269_1**, Pre-Bid Conference (PBC) was concluded on 08.08.2023 for "UV Spectrophotometer". Consequent upon the outcome of PBC, **some changes have been made in the technical specification of captioned tender. Revised specifications are as follows:**

S No	Parameter Name	Parameter Value
1.	Measurement Modes of UV-Vis-NIR Spectrophotometer	Reflection Transmission Absorbance
2.	Sample	liquid samples, thin films, pallets, powders
3.	Wavelength range	180 to 3,000 nm or broader
4.	Lamp	Deuterium and Tungsten halogen lamps (with automatic alignment)
5.	Monochromator	Double monochromator type
6.	Spectral bandwidth	UV-Vis: 0.05–5.00 nm or broader with minimum step of ≤ 0.01 nm NIR: 0.2– 5.00 nm or broader with minimum step of ≤ 0.05 nm
7.	Resolution	UV VIS : ≤ 0.05 nm NIR : ≤ 0.3 nm
8.	Wavelength repeatability/ reproducibility	Standard Deviation of 10 measurements – UV VIS : ≤ 0.005 nm NIR: ≤ 0.03 nm
9.	Wavelength maximum scanning speed	UV-Vis: ≤ 1800 nm/min NIR: ≤ 5000 nm/min
10.	Stray light	≤ 0.00007

11.	Photometric system	Double Beam
12.	Upper limit of measurable Absorbance	8 Abs or higher using Reference Beam Attenuator for complete wavelength range
13.	Absorbance measuring accuracy	≤ 0.0003 at 0.3/0.5 Abs
14.	RMS Noise at 0 Abs	≤ 0.0001 (at 190 nm) ≤ 0.00005 (at 500 nm) ≤ 0.00003 (at 1500 nm)
15.	Baseline Flatness with no smoothing	≤ ± 0.0008 Å (in the range 190 to 3000 nm)
16.	Stability of Absorbance Measurement after suitable warm-up	≤ 0.0002 Abs/h (at 500 nm)
17.	Detector	Suitable detectors covering the full wavelength range (180-3000 nm) with auto detector selection and alignment. High-performance photomultiplier tube PMT, PbS or any other superior detector. The performance characteristics of each detector should be clearly mentioned. Covering entire wavelength range without any detector replacement/changeover or manual intervention (180-3000nm)
18.	Diffuse reflectance accessory	Integrating Sphere (diameter ≥ 10 cm) based diffuse reflectance accessory for powder samples, with independent detectors inside the module, along with required polarizer and depolarizer.
19.	Additional System Capability	The system should be capable of automated software-controlled measurement of scattered transmission, scattering of glossy surface, diffuse scattering, direct transmission and more absolute specular reflection having following features • Direct transmission and variable angle transmission from -80 to +80 degrees in minimum 0.05-degree Intervals. • Automated measurement of absolute reflection and transmission, at user-definable angles, for s-polarized and p-polarized light. • Measurement of absolute reflection and

		transmission from exactly the same point on the sample without moving or disturbing it or the light incident upon it. • Measurement of diffuse scattering, reflection or transmission through independent sample rotation (~360 degrees) and detector positioning (~ 360 degrees) at minimum 0.05-degree intervals with a resolution of 0.01 and accuracy of 0.1 • Measurement of absorptance at a variable angle without moving the sample or beam onto the sample for improved productivity and greater accuracy • Measurement of Reflection/Transmission at a single wavelength or wavelength range • Measurement of Absolute reflectance, transmission and scattering without moving the sample. • In-built detectors to cover wavelength range 250-2500 nm. • The sample and detector should never lose their position during data collection. • Should have inbuilt polarizers to provide uniformity across the wavelength range and best polarization accuracy. • Manual alignment should not be required while the exchange of accessories • Should have a Quartz window for sample holder tilt alignment. • Should have fixed diameter sample holders for %R & %T measurement of round samples of 1 inch, 1.5 inch and 2 inch diameters (for both thick and thin samples). Each holder should have a 2 mm selvage perimeter to contact the sample. • Reference standard from NMI or having direct traceability from NMI measured at 7 deg or suitable angle of incidence should be provided.
20.	Other requirements	• Vibration isolation table • Installation/operation and training at NPL site • Spare deuterium and tungsten halogen lamps (2 no's of each)

		• 5 Sets of 10 mm and 5 sets of 1 mm quartz cuvettes • Training for atleast 2 days at the installation site • Holder for solid, liquid and thin films for all measurement modes • Suitable Sample holder to handle large specimen (100 mm x 100 mm or larger) for reflectance measurements
21.	Capabilities of the Control Software	• Data Acquisition Modes: Spectrum, Kinetics and Photometric Quantization • Capability of data processing while measurement is being executed • Ordinate Modes: Abs, %T, %R, Absolute %R, Log Abs, 1^{st}-4^{th} Derivative, Absorptivity, and Dual Ordinate mode, • Kulbelka-Munk functions • Abscissa Modes: Continuous, stepped and multi-point modes: nm, cm^{-1}, Å , min/sec, mm, angle, • Data processing (data manipulations like spectral calculations, comparison, time scan and kinetic measurements), • Band gap calculation. • Kinetics (Time Course) Mode • Report Generation
22.	Calibration standards	Calibration standards from NMI or having direct traceability from NMI for all essential technical parameters e.g. Absorbance, wavelength, reflectance, transmission, and others. NMI certificate for stray light should be provided
23.	Gas Purging option	Facility for gas purging with suitable MFCs for Nitrogen and Argon
24.	Power supply	As per Indian Standards
25.	Operating condition	Temperature: 15 °C to 35 °C humidity : 35 % to 60 %
26.	Warranty	3-year comprehensive from OEM with part numbers other than a standard one-year warranty

27.	Data Acquisition System	Licensed latest windows-based data acquisition system (64-bit, 3 GHz, i7 11th gen. processor or better); 32 GB Ram; 1 TB storage (SSD); 27-inch (FHD) monitor; Color printer(ink tank), licensed MS office, Acrobat Reader, CDROM
28.	UPS	3 kVA online UPS
29.	Software	Offline support on other computers in the group
30.	Instrument acceptability	Authentic Documents related to last 5 year sale in India/International and customer reviews

Therefore, following extension in due date of submission & date of opening of the said tender may be read exactly as follows:

Due date & time of tender submission
For : 31.08.2023 up to 3:00 PM (IST)
Read as: 14.09.2023 up to 3:00 PM (IST)

Date & Time of Tender Opening
For : 01.09.2023 at 3:00 PM (IST)
Read as: 15.09.2023 at 3:00 PM (IST)

All other terms & conditions of said tender will remain the same.

Sr. Controller of Stores & Purchase

Minutes of the Meeting (MOM) of the 'Pre Bid Conference (PBC)' conducted on 08/08/2023 (Tuesday) in the Director Conference Room, Main Building CSIR-NPL, New Delhi

Ref: (i) CSIR-NPL Tender No. 14-VI/SPS (1116)22PB/T-69 (CPP Portal Tender ID 2023_CSIR_721269_1)
(ii) CSIR-NPL Indent No. PR5041182022 dated 28/02/2023

The Pre-Bid Meeting (PBG) for the procurement of a **'UV-Vis-NIR spectrophotometer'** was conducted on 08/08/2023 in a hybrid (physical and online) mode in the Director Conference room, Main Building CSIR-NPL. Following vendors & their representatives participated:

1. Mr Nirankar Singh, **Perkin Elmer**, Spectralytical Scientific India Private Ltd., 414-416, DLF Tower, 15, Shivaji Marg, Moti Nagar, New Delhi-110015
2. Mr Piyush Shukla/ Mr Partha Sen, **Agilent Technologies Pvt. Ltd.**, Ground Floor, Elegance Tower, Plot 8, Jasola District Centre New Delhi-110025

Following members of the T&PC/TSC Committee from CSIR-NPL were present:

1)	Dr H.K. Singh (CSIR-NPL)	Chairman
2)	Dr Anjana Dogra (CSIR-NPL)	Member
3)	Dr Sachchidanand Singh (CSIR-NPL)	Member
4)	Dr Shibu Shah (CSIR-NPL)	Internal Expert
5)	Dr S. P. Singh (CSIR-NPL)	Indenter

Dr Ajit Kumar Mahapatro (Professor, Dept of Physics, University of Delhi) was invited as an 'External expert' for this meeting and he only attended the meeting in online mode.

The Chairman & members of the T&PC/TSC Committee, along with External Expert discussed the technical specifications of the instrument with both the Vendors/suppliers in detail as advertised in the tender **(CHAPTER – 4: SPECIFICATIONS AND ALLIED TECHNICAL DETAIL)**. They also discussed the other required documents to be submitted with the bid; such as, EMD, PBG, bid currency, validity, etc.

The participating vendor(s) suggested minor changes in specifications published in tender no. 14-VI/SPS (1116)22PB/T-69) during the pre-bid meeting. In addition, all the participating vendors were given two days of additional time to submit if, any other suggestion(s) related to technical specifications. In response, the vendor/supplier representing M/s Perkin Elmer submitted their suggestions through email dated 10/08/2023 (copy attached).

The necessary modifications were incorporated after discussion with subject experts (highlighted in attached Annexture-I, dated 16/08/2023). They also agreed to fulfil other terms and conditions for the supply of the equipment as given in the tender.

The meeting ended with thanks to the External Expert & Chairman-T&PC/TSC Committee.

In view of minor changes in specifications, the final bid submission date may be extended to 15 days from the date of uploading revised specifications.

Comparison of Specification for UV-Vis-NIR Spectrophotometer after Pre-Bid meeting

S No	Parameter Name	Parameter Value (old)	Suggestive amendments		Final specifications	Remarks
			Perkin Elmer	Agilent Technologies Pvt.Ltd.		
1.	Measurement Modes of UV-Vis-NIR Spectrophotometer	Reflection Transmission Absorbance	No change	No amendments suggested. M/s Agilent technologies agreed with changes suggested by M/s Perkin Elmer	Reflection Transmission Absorbance	
2.	Sample	liquid samples, thin films, pallets, powders	No change		liquid samples, thin films, pallets, powders	
3.	Wavelength range	180 to 3,000 nm or broader	No change		180 to 3,000 nm or broader	
4.	Lamp	Deuterium and Tungsten halogen lamps (with automatic alignment)	No change		Deuterium and Tungsten halogen lamps (with automatic alignment)	
5.	Monochromator	Double monochromator type	No change		Double monochromator type	
6.	Spectral bandwidth	UV-Vis: 0.05–5.00 nm or broader with minimum step of ≤ 0.01 nm NIR: 0.2– 5.00 nm or broader with minimum step of ≤ 0.05 nm	No change		UV-Vis: 0.05–5.00 nm or broader with minimum step of ≤ 0.01 nm NIR: 0.2– 5.00 nm or broader with minimum step of ≤ 0.05 nm	
7.	Resolution	UV VIS : ≤ 0.05 nm NIR : ≤ 0.3 nm	No change		UV VIS : ≤ 0.05 nm NIR : ≤ 0.3 nm	
8.	Wavelength repeatability/ reproducibility	Standard Deviation of 10 measurements – UV VIS : ≤ 0.005 nm NIR: ≤ 0.03 nm	No change		Standard Deviation of 10 measurements – UV VIS : ≤ 0.005 nm NIR: ≤ 0.03 nm	
9.	Wavelength Maximum scanning speed	UV-Vis: Min. 1800 nm/min NIR: Min. 7800 nm/min	Wavelength scanning speed: UV-Vis: Max. 1800 nm/min **NIR: Max. 5000**		UV-Vis: ≤ 1800 nm/min NIR: ≤ 5000 nm/min	Change Accepted

			nm/min			
10.	Stray light	≤ 0.00007	No change		≤ 0.00007	
11.	Photometric system	Double Beam	No change		Double Beam	
12.	Upper limit of measurable Absorbance	8 Abs or higher using Reference Beam Attenuator for complete wavelength range	No change		8 Abs or higher using Reference Beam Attenuator for complete wavelength range	
13.	Absorbance measuring accuracy	≤ 0.0003 at 0.3/0.5 Abs	No change		≤ 0.0003 at 0.3/0.5 Abs	
14.	RMS Noise at 0 Abs	≤ 0.0001 (at 190 nm) ≤ 0.00005 (at 500 nm) ≤ 0.00003 (at 1500 nm)	No change		≤ 0.0001 (at 190 nm) ≤ 0.00005 (at 500 nm) ≤ 0.00003 (at 1500 nm)	
15.	Baseline Flatness with no smoothing	≤ ± 0.0008 Å (in the range 180 to 3000 nm)	Baseline Flatness with no Smoothing: ≤ ± 0.0008 Å (in the range **190to 3000 nm)**		≤ ± 0.0008 Å (in the range 190 to 3000 nm)	Change Accepted
16.	Stability of Absorbance Measurement after suitable warm-up	≤ 0.0002 Abs/h (at 500 nm)	No change		≤ 0.0002 Abs/h (at 500 nm)	
17.	Detector	Suitable detectors covering full wavelength range (180-3000 nm) with auto detector selection and alignment. High-performance photomultiplier tube PMT, PbS or any other superior detector. The performance characteristics of each detector should be clearly mentioned. Covering entire wavelength range without any detector	High-performance photomultiplier tube PMT, **InGaAs for Low Noise in NIR region** ,PbS or any other superior detector. The performance characteristics of each detector should be clearly mentioned. Covering entire wavelength range without any detector		Suitable detectors covering the full wavelength range (180-3000 nm) with auto detector selection and alignment. High-performance photomultiplier tube PMT, PbS or any other superior detector. The performance characteristics of each detector should be clearly mentioned. Covering entire wavelength range without any detector	Change rejected for keeping the Specification more general without compromising the system capabiliti

		replacement/changeover or manual intervention (180-3000nm)	replacement/changeover or manual intervention (180-3000nm)		replacement/changeover or manual intervention (180-3000nm)	es
18.	Diffuse reflectance accessory	Integrating Sphere (diameter ≥ 11 cm) based diffuse reflectance accessory for powder samples, with independent detectors inside the module, along with required polarizer and depolarizer.	Diffuse reflectance accessory: Integrating Sphere **(diameter ≥ 15 cm)** based diffuse reflectance accessory for powder samples, with independent detectors inside the module, along with required polarizerand depolarizer.		Integrating Sphere (diameter ≥ 10 cm) based diffuse reflectance accessory for powder samples, with independent detectors inside the module, along with required polarizer and depolarizer.	Change accepted as per requirement and for making the Specification more general
19.	Additional System Capability	The system should be capable of automated software-controlled measurement of scattered transmission, scattering of glossy surface, diffuse scattering, direct transmission and more absolute specular reflection having following features • Direct transmission and variable angle transmission from 0 to 180 degrees in minimum 0.05-degree Intervals. • Automated measurement of absolute reflection and transmission, at user-definable angles, for s-polarized and p-polarized light. • Measurement of absolute reflection and	Additional System Capability: Direct transmission and variable angle transmission from **±80 degrees** in minimum 0.05-degreeIntervals. No change		The system should be capable of automated software-controlled measurement of scattered transmission, scattering of glossy surface, diffuse scattering, direct transmission and more absolute specular reflection having following features • Direct transmission and variable angle transmission from -80 to +80 degrees in minimum 0.05-degree Intervals. • Automated measurement of absolute reflection and transmission, at user-definable angles, for s-polarized and p-polarized light. • Measurement of absolute reflection and	Change Accepted

		transmission from exactly the same point on the sample without moving or disturbing it or the light incident upon it. • Measurement of diffuse scattering, reflection or transmission through independent sample rotation (~360 degrees) and detector positioning (~ 360 degrees) at minimum 0.05-degree intervals with a resolution of 0.01 and accuracy of 0.1 • Measurement of absorptance at a variable angle without moving the sample or beam onto the sample for improved productivity and greater accuracy • Measurement of Reflection/Transmission at a single wavelength or wavelength range • Measurement of Absolute reflectance, transmission and scattering without moving the sample. • In-built detectors to cover wavelength range 250-2500 nm. • The sample and detector should never lose their	No change No change No change No change In-built / exchangeable detectors to cover **Complete wavelength range 200-3000 Nm.**		transmission from exactly the same point on the sample without moving or disturbing it or the light incident upon it. • Measurement of diffuse scattering, reflection or transmission through independent sample rotation (~360 degrees) and detector positioning (~ 360 degrees) at minimum 0.05-degree intervals with a resolution of 0.01 and accuracy of 0.1 • Measurement of absorptance at a variable angle without moving the sample or beam onto the sample for improved productivity and greater accuracy • Measurement of Reflection/Transmission at a single wavelength or wavelength range • Measurement of Absolute reflectance, transmission and scattering without moving the sample. • In-built detectors to cover wavelength range 250-2500 nm. • The sample and detector should never lose their	Change rejected as no documen

		position during data collection. • Should have inbuilt polarizers to provide uniformity across the wavelength range and best polarization accuracy. • Manual alignment should not be required while the exchange of accessories • Should have a Quartz window for sample holder tilt alignment. • Should have fixed diameter sample holders for %R or %T measurement of round samples of 1 inch, 1.5 inch and 2 inch diameters. Each holder should have a 2 mm selvage perimeter to contact the sample. • NIST traceable reflectance standard measured at 7 deg angle of incidence should be provided.	**A set of user exchangeable polarizers should also include to cover 200-2500 fullrange with no noise in UV region starting 210-2500.** No change No change No change NIST traceable reflectance standardmeasured **at 7 deg or Suitable**		position during data collection. • Should have inbuilt polarizers to provide uniformity across the wavelength range and best polarization accuracy. • Manual alignment should not be required while the exchange of accessories • Should have a Quartz window for sample holder tilt alignment. • Should have fixed diameter sample holders for %R & %T measurement of round samples of 1 inch, 1.5 inch and 2 inch diameters (for both thick and thin samples). Each holder should have a 2 mm selvage perimeter to contact the sample. Reference standard from NMI or having direct traceability from NMI measured at 7 deg or suitable angle of incidence should be provided.	ted proof is available/ provided for the suggeste d range Change included by Indenter Change included by Indenter To make specificat ion more general
20.	Other requirements	• Vibration isolation table • Installation/operation and training at NPL site	No change		• Vibration isolation table • Installation/operation and training at NPL site	

		• Spare deuterium and tungsten halogen lamps (2 no's of each) • 5 Sets of 10 mm and 5 sets of 1 mm quartz cuvettes • Training for atleast 2 days at the installation site • Holder for solid, liquid and thin films for all measurement modes • Suitable Sample holder to handle large specimen (100 mm x 100 mm or larger) for reflectance measurements			• Spare deuterium and tungsten halogen lamps (2 no's of each) • 5 Sets of 10 mm and 5 sets of 1 mm quartz cuvettes • Training for atleast 2 days at the installation site • Holder for solid, liquid and thin films for all measurement modes Suitable Sample holder to handle large specimen (100 mm x 100 mm or larger) for reflectance measurements	
21.	Capabilities of the Control Software	• Data Acquisition Modes: Spectrum, Kinetics and Photometric Quantization • Capability of data processing while measurement is being executed • Ordinate Modes: Abs, %T, %R, Absolute %R, Log Abs, 1^{st}-4^{th} Derivative, Absorptivity, and Dual Ordinate mode, • Kulbelka-Munk functions • Abscissa Modes: Continuous, stepped and multi-point modes: nm, cm^{-1}, Å , min/sec, mm, angle, • Data processing (data manipulations like spectral calculations, comparison, time scan and kinetic	No change		• Data Acquisition Modes: Spectrum, Kinetics and Photometric Quantization • Capability of data processing while measurement is being executed • Ordinate Modes: Abs, %T, %R, Absolute %R, Log Abs, 1^{st}-4^{th} Derivative, Absorptivity, and Dual Ordinate mode, • Kulbelka-Munk functions • Abscissa Modes: Continuous, stepped and multi-point modes: nm, cm^{-1}, Å , min/sec, mm, angle, • Data processing (data manipulations like spectral calculations, comparison, time scan and kinetic	

		measurements), • Band gap calculation. • Kinetics (Time Course) Mode • Report Generation			measurements), • Band gap calculation. • Kinetics (Time Course) Mode Report Generation	
22.	Calibration standards	Calibration standards traceable to any NMI for all essential technical parameters e.g. Absorbance, wavelength, reflectance, transmission, and others. NMI certificate for stray light should be provided	Certified Calibration standards: Calibration standards traceable to any NIST/NMI for all essential technical parameters e.g. Absorbance, wavelength, reflectance, transmission, and others. NIST/NMI certificate for stray light shouldbe provided		Calibration standards from NMI or having direct traceability from NMI for all essential technical parameters e.g. Absorbance, wavelength, reflectance, transmission, and others. NMI certificate for stray light should be provided	Change included by Indenter To make specification more general
23.	Gas Purging option	Facility for gas purging with suitable MFCs for Nitrogen and Argon	No change		Facility for gas purging with suitable MFCs for Nitrogen and Argon	
24.	Power supply	As per Indian Standards	No change		As per Indian Standards	
25.	Operating condition	Temperature: 15 °C to 35 °C	No change		Temperature: 15 °C to 35 °C	
		humidity : 35 % to 60 %	No change		humidity : 35 % to 60 %	
26.	Warranty	3-year comprehensive from OEM with part numbers other than a standard one-year warranty	No change		3-year comprehensive from OEM with part numbers other than a standard one-year warranty	
27.	Data Acquisition System	Licensed latest windows-based data acquisition system (64-bit, 3 GHz, i7 11th gen. processor or better); 32 GB Ram; 1 TB storage (SSD); 27-inch (FHD) monitor; Color printer(ink tank), licensed MS office, Acrobat Reader, CDROM	No change		Licensed latest windows-based data acquisition system (64-bit, 3 GHz, i7 11th gen. processor or better); 32 GB Ram; 1 TB storage (SSD); 27-inch (FHD) monitor; Color printer(ink tank), licensed MS office, Acrobat Reader, CDROM	
28.	UPS	3 kVA online UPS	No change		3 kVA online UPS	

29.	Software	Offline support on other computers in the group	No change		Offline support on other computers in the group	
30.	Instrument acceptability	Authentic Documents related to last 5 year sale in India/International and customer reviews	No change		Authentic Documents related to last 5 year sale in India/International and customer reviews	