



INDIAN INSTITUTE OF TECHNOLOGY BOMBAY

MATERIALS MANAGEMENT DIVISION

Powai, Mumbai - 400076

PR No. 1000023490

Rfx No. 6100001106

“Technical Specification of UV/VIS-NIR Spectrophotometer”

- 1) **Wavelength range (nm):** 175–3300 nm or better
- 2) **Optics:** Double beam, Double monochromator
- 3) **Light Source:**
 - a. Tungsten halogen visible source with quartz window
 - b. Deuterium ultraviolet (UV) arc source
 - c. Mercury (Hg) lamp module for automatic wavelength accuracy validation
- 4) **Detectors:** High performance R928 wide range PMT & Low noise thermo electrically controlled PbS
- 5) **Spectral bandwidth (nm):**
 - a. 0.01–5.00 nm, 0.01 nm steps
 - b. 0.04–20 nm
- 6) **Stray light (%T):** <0.00007%
- 7) **Grating:**
 - a) 1200 lines/mm (UV) or more
 - b) 300 lines/mm (NIR) or more
- 8) **Resolution (nm):**
 - a. <0.048 nm or better (UV)
 - b. <0.2 nm or better (NIR)
- 9) **Wavelength accuracy (nm):**
 - a. ± 0.08 nm or better (UV)
 - b. ± 0.4 nm or better (NIR)
- 10) **Wavelength reproducibility (nm)**
 - a) <0.005 nm or better (UV)
 - b) <0.02 nm or better (NIR)
- 11) **Photometric accuracy (Abs):** <0.00025 Abs or better
- 12) **Photometric range (Abs):** 8 Abs or more for both UV-Vis and NIR Range
- 13) **Photometric noise (Abs/RMS):** <0.00009 or better
- 14) **Photometric Stability:** <0.00018 Abs/h (2 h warm up, 500 nm, 1 S averaging, 2nm SBW)
- 15) **Scan rate:** 2000 nm/min in UV-VIS (or better), 8000 nm/min in NIR (or better)

“Technical Parameters”

- I. Optics must be contained in one solid aluminium casting with isolation from external vibrations.
- II. The system must have customer removable lamp housing for easy exchange and flexibility.
- III. Purging of entire optical path, including monochromator, sample and detector compartment with a separate purging line for the sample compartment should be possible.
- IV. Must have in-built electronic, detector and monochromator calibration routines to support accurate measurements.
- V. Must include an integrating sphere to allow measurements of reflectance or transmittance of scattering samples.
- VI. The Integrating Sphere should be PTFE coated & of 110 mm diameter or better with UV-VIS photomultiplier tube and NIR PbS detector.
- VII. Both liquid and solid sample holders should be included
- VIII. 1 year Standard Warranty.

Note:

- 1) System should come with its' operation and analysis software and UPS for limited time power backup.
- 2) Laptop for operation compatible to the System should included with the set:
Processor: 10th Gen Intel Core i5/i7
2.5GHz up to 3.7 GHz base processor speed
Operating System: Windows 11
Display: 14/15.6-inch FHD (1920x1080) display
Memory & Storage: 8GB DDR4 RAM with Intel HD 620
Graphics | Storage: 1TB HDD/512 SSD

Installation and Commissioning is in Vendor's scope.