Final & Frozen Technical Specification

Circular Dichroism spectropolarimeter Quantity 1

Specifications:

The Circular Dichroism spectro-polarimeter should be possible to measure small quantity of sample. Software should give protein secondary structure estimation.

1. **Light source:** Highly stable 150W air-cooled Xe lamp and, Xe/Hg lamp for spectrometer validation
2. **Detector:** High performance detector (PMT). Wavelength range 165-900 nm or above. Should also be suitable for highly scattering samples.
3. **Monochromator:** A dual polarizing prism/grating monochromator for the highest S/N ratio.
4. **Wavelength specifications:**
    a. Accuracy: at least ±0.5 nm (up to 400 nm) or better, ± 1 % or better in the entire range
    b. Reproducibility/Precision: ±0.5 nm or better
    c. Resolution: 0.1nm or better
5. **CD full scale** : ± 7000 mdeg or better
6. **CD resolution:**0.00001 mdeg or better (vendor should specify)
7. **CD RMS noise:** (0.05 or better in the 175-800 nm wavelength range)
8. **Stray Light:** <3 ppm at 200 nm or better
9. **Slit Bandwidth:** 0.1 to 15 nm or better
10. **Absorbance measurement:** Simultaneously recorded with CD measurement
11. **Scanning method:**Continuous scan or Step scan mode(Step scan preferred)/kinetic scan
12. **Temperature controller:** single-cell peltier including an external temperature probe covering a temperature range -10 to 105 degree C. Should be capable to do multi-wavelength temperature ramping in a single experiment
13. **Chiller unit:** for use with the peltier to be quoted
14. **Rectangular Cells:**1mm, 2mm, 5mm, and 10mm of pathlenth (each) should be included with the required cell spacers
15. **Low volume Sampling Accessory:** 20-30 micro litre sampling accessory/ capillary sample holder to be supplied as standard
16. **Shutter:** Computer controlled shutter to prevent damage of the system
17. **N_2 purging and requirement:** Separate nitrogen flow lines and flow meters, for the lamp chamber, monochromator and sample chamber to provide rapid and efficient nitrogen purging must be included . Also required standard nitrogen cylinder/generator for steady nitrogen source.
18. **Software functionality, data acquisition and analysis:** High-speed spectral scan, 3D scan, Multi-wavelength variable temperature programming. Multiple data display and presentation tools, Post-acquisition smoothing tools, Analysis tools including, temperature curve fitting, and maths tools, Global thermodynamic analysis, Direct export to other file formats e.g. spreadsheet, Protein secondary structure analysis and estimation software, Curve-fitting analysis, System validation program. Unlimited

license to install the data display software on other PC's to allow data inspection, analysis and presentation at the desktop must be included.

19. **Rectangular cells and spacers:** Cuvettes with path lengths 1 mm, 2 mm, 5 mm, and 10 mm should be included with the required cell spacers
    (3 curvets in number of each type)
20. Extra pair of xe-lamp for the machine to be included
21. Micro (3-5 microliter) sampling disk or equivalent set up
22. **Branded desktop computer:** The equipment should be interfaced with windows 10 professional or higher OS. One branded state-of-the-art Desktop PC from a reputed make (with a latest processor at least i7 or above processor, 16 GB RAM, 1 TB hard disk, LED 27" monitor, mouse etc. and **Printer**: one branded color laser printer with a front display panel and xerox facility.
23. A suitable computer (in addition to the main operating system) with a latest processor at least i7 or above, 16GB RAM, 1 TB hard disk, LED 27" monitor, mouse etc. and necessary software should be provided to processes the data by multiple users.
24. A laboratory standard steel cabinet/almirah for storage the instrument parts such as cuvettes, lamps etc should be included.
25. **Installation & Training:** To be included , training for two years (twice in each year)
26. **UPS**: Suitable online UPS (2kVA) with back up time at least for 30 min with imput output cables.
27. **General requirements:**

- Instrument having internal validation/ vendor specific validation.
- **Warranty:** Comprehensive warranty of minimum three years on the equipment and the accessories.
- **Future Upgrade options:** Vendor should mention all up gradation facilities

28. List of users from CSIR Labs, other govt and semi govt institutes in India