

- **Technical Specifications for Laser Flash Photolysis Transient Absorption Spectrometer**

The Laser Flash Photolysis Transient Absorption Spectrometer consists of two components, which are labeled below as A and B. The vendor should have demonstrated the capability to integrate component A and B, which constitutes the ‘Laser Flash Transient Absorption Spectrometer’. User Certificates for satisfactory installation, demonstrating the capabilities of the vendor for integrating the two components, namely A and B, should be given separately. The absence of this vital information in the bid will result in the disqualification of the vendor.

Part A: Flash Photolysis Spectrometer: The spectrometer should be capable of performing transient absorption measurements at nano seconds and longer. It should be possible to measure the kinetics of the excited state dynamics at single as well as multiple wavelengths. The components and technical specifications are given below. Compliance from the vendor is expected in the last column.

No.	Description	Technical Specifications of the components in Spectrometer	Compliance
1	Light Source	Xenon arc lamp (150W) suitable for both pulsed and continuous wave (CW) mode. The sensitivity expected is +/- 0.001 AU in pulsed mode and +/- 0.0005 AU in CW mode.	
2	Monochromator	Should be programmable, Czerny-Tunlar type, f/3.4 with 1200 lines/mm holographic grating covering wavelength range of 250 nm to 850 nm.	
3	Detector	Photomultiplier tube with 9 stage dynode-chain housing: R928. The detection range should be from 190 nm to 920 nm with a rise time of 2 to 3 ns.	

4	Sample Housing	Should have programmable shutters, cell holder with thermostat unit, optical setting for cross beam excitation, filter holder, option for inert gas purging, integrated optical rails	
5	Data Acquisition	ASCII data format, digital oversampling (up to 10, 000,000 samples per kinetic acquisition), linear and logarithmic time-base options, up to 10 points per ns sampling rate	
6	Interlock unit	Suitable interlocking system should be provided to avoid the accidental trigger of ignition pulse	
7	Spectrometer control unit and sequencer	Operations of the spectrometer should be automated and should be able to make sequential events with the help of the control unit (ie independent of the work station). It should be configured for both 10 Hz as well as single shot operations	
8	Control Software	Full control on the spectrometer, comprehensive data display mode, analysis tool by non-linear least squares algorithm (Marquardt-Levenberg). Software should have with unlimited license.	
9	Global Analysis Software	The software should be able to do SVD and global analysis of multi-wavelength kinetic data, with data simulation facility. Should be able to fit the data for various kinetic models. Software should have with unlimited license.	

Part B: Laser System for integration with Flash Photolysis Spectrometer as in Part A.

No.	Description	Technical Specification	Compliance
1	Pulsed energy	850 mJ at 1064 nm 450 mJ at 532 nm 220 mJ at 355 nm 100 mJ at 266 nm	
2	Repetition rate	10 Hz as well as single shot	
3	Modes of operation	Long pulse and Q switch	
4	Pulse width	8-10 ns	
5	Pulse shape	Gaussian	
6	Beam Diameter	< 10 mm	
7	Spatial Mode	Gaussian	
8	Beam divergence	< 0.5 mrad	
9	Jitter	< 0.5 ns	
10	Harmonics Generator	Single housing for all the harmonics and provisions for external pre-post triggering	
11	Energy fluctuations from pulse to pulse	< 5%	
12	External trigger	Q switch TTL output	
13	Cavity	Sealed	
14	Coupling Optics	OPO to be pumped by the YAG with motorized wavelength tuning and necessary coupling optics	

15	Input energy	> 200 mJ at 355 nm	
16	Wavelength range of OPO	415-2500 nm	
17	Pulse energy signal	>40 mJ maximum	
18	Pulse energy signal+ idler	>50 mJ	
19	Line width	<10 cm ⁻¹	
20	Voltage	230 VAC50 Hz single phase	

The lamp replacement should be easy without opening the cavity or disturbing the YAG rod.

All necessary chillers required should be quoted for tap water free operations.

The quote should also include sample cuvettes (10 numbers), required number of computers with latest version of Microsoft Windows operating system, monitors, and printers.

Optional accessories:

1. Beam Expanding Telescope
2. Diffuse Reflectance Accessory
3. NIR detection