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Technical Specifications for Upgradation of Transient Absorption Spectrometer.

Upgrade of existing Transient Absorption Setup with complete Automated Femtosecond Up-conversion Spectrometer

The Spectrometer designed to work in combination with existing transient absorption setup which includes Helios Transient Spectrometer and Coherent Laser Model: Libra USP and OperaSolo OPA.

Vendor would be responsible for demonstrating the running of the complete transient absorption and fluorescence up-conversion setup together.

Sr. No	Tender Specifications
1.	Up-conversion spectrometer allow for spectral data acquisition in 270-800 nm spectral range.
2	The crystal mounted on computer controlled rotary stage for automated adjustment of crystal phase matching angle.
3	The system able to work with 1 KHz Ti:Sa Amplifier
4	High Speed Direct Drive Delay Line with all necessary electronics having automated alignment as below: <ul style="list-style-type: none">• Retroreflectors with chirp corrected dielectric mirrors to preserve the laser pulse parameters (Short pulse) as well as retain most of the power (~90%).• Fully automated and hands-off alignment of the delay line with Beam pointing drift of <10 μm throughout an 8 ns delay range.• The beam path should not be actively adjusted or moved during the measurement to avoid a temporal measurement error.• Typical alignment time is 3-5 min.• Time window: 8 ns• Resolution: 14 fs• Minimum step size: 2.8 fs• Max. speed: >10 ns/s• Acceleration: > 260 ns/s²
5	Reflective and transmission measurements is possible.
6	The system is able to work with easily photodegradable samples.
7	The system is automated (software controlled) to switch between different spectral ranges (UV, VIS & NIR if procured in future) without any manual intervention or alignment.
8	Single photon counting PMT with a monochromator for fluorescence detection. Intrinsic spectral range: 230-700 nm. Intrinsic temporal response: 250 ps. The system having a provision to upgrade system with cooled back-illuminated CCD detector (1024x256 pixels, 26x26 μm pixel, 500KHz/16bit, -40degC, 480spectra/sec) for broadband detection in future.
9	A Liquid sample holder including magnetic stirring option.
10	Data acquisition hardware and software for fluorescence measurement. A labview based advanced software capable of performing following functions should be provided with the system.

	<ul style="list-style-type: none"> • Computer controlled switching between UV, VIS and NIR modes • Supports computer controlled translating sample holder • Selection of Time window • Random delay line stepping • The software saving every individual kinetic scan, to prevent the data loss if experiment is aborted by any means.
11	<p>Data analysis software for kinetic and spectral analysis include the following :</p> <ul style="list-style-type: none"> • Various display options for dynamic surface • Averaging of multiple surfaces • Facile "stitching" of surfaces having different temporal and spectral ranges • Quick navigation through spectra and kinetics • Simultaneous display of multiple spectra and kinetics • Origin integration • Selected spectra and kinetics can be quickly exported into CSV files or directly into Origin • Quickly fit kinetics and export results into Origin with a single click • Create reports and export them into PDF or Origin with a single click • Time zero adjustment • Temporal chirp correction • Quickly and easily normalize spectra and kinetics • Subtraction of scattered light & background • Perform SVD and Global Analysis • Mapping option in the software
12	<p>Motorized, translating sample holder for solid and thin film samples.]\ having capability of Mapping option as well . Maximum translation area – 12x12 mm², maximum translation speed – 5 mm/s, maximum sample thickness – 12 mm. The sample holder software is integrated into the main spectrometer software.</p>
13	<p>Provide appropriate supporting documents wherever required, for example, spectral range, measurement range, automatic alignment of delay stage and spectral range change, detector range and optical accessories. provide measured data of following samples with spectrometer and 1KHz Coherent Libra Laser</p> <ol style="list-style-type: none"> ZnTPP with oxygen in Toluene using PMT detector and 1KHz Libra laser Flavin Mononucleotide (FMN) and PTP (p-Terphenyl) in ethanol using CCD detector and 1KHz Libra laser
14	<p>Temperature control unit /holder to be coupled with the Existing cryostat in the Lab (Make Janis).</p>
15	<p>A suitable computer with preloaded windows-based operating system and other software's be supplied with the equipment.</p>

General conditions:

- All power supplies should be of Indian type 220-250 Volts, 50 Hz, with Indian standard plugs.
- System must have installation and on-site training included
- Compliance sheet of the quoted system against tender specification should be provided.
- Authorization letter should be furnished along with the quotation
- Installed reference of Fluorescence Up-conversion Spectrometer in India with the Coherent 1KHz Libra amplifier is mandatory.
- Warranty: 1 years comprehensive on all parts from the date of succesful installation/commissioning of equipment.