



INDIAN INSTITUTE OF TECHNOLOGY BOMBAY

MATERIALS MANAGEMENT DIVISION

Powai, Mumbai 400076.

Reference (PR No.1000020990) RFx No.6100000872

Technical specifications of Integrated characterization system for 2D materials and nanocavities

A. Components for excitation

- 1) **Diode laser driver for picosecond pulses**
 - i) should support cw operation as well
 - ii) 12 internal repetition rates (31.25 kHz to 80 MHz)
 - iii) external trigger input
 - iv) 2 gating inputs

- 2) **Laser head for picosecond pulses and cw operation**
 - i) 515 ± 10 nm
 - ii) including collimator and temperature stabilization

- 3) **Compact fibre coupling for the Laser head**
 - i) single mode fiber coupler
 - ii) incl. variable attenuator
 - iii) incl. mounting baseplate
 - iv) optimized for the wavelength range 370 nm - 600 nm

- 4) **Single mode fiber cable**
 - i) polarization maintaining
 - ii) length 4.0 m, cutoff < 400 nm
 - iii) fiber core = $3.5 \mu\text{m}$, NA 0.11
 - iv) output connector FC/APC

B. Electronic Components

- 1) **TCSPC module and event timer**
 - i) independent channels with at least 100 ps temporal resolution



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- ii) at least 4 input channels & 1 sync
- iii) Minimum time bin width: 80 ps
- iv) Timing precision: < 85 ps rms
- v) Timing precision / $\sqrt{2}$ *: < 60 ps rms
- vi) Dead time: < 650 ps
- vii) Maximum sync rate: 1.2 GHz
- viii) Adjustable programmable time offset for each input channel: ± 100 ns
- ix) Peak count rate per input channel: 1.5×10^9 counts/sec
- x) Total sustained count rate: 180×10^6 counts/sec
- xi) histogramming with 65536-time bins and 32-bit depth
- xii) with USB 3.0 connection
- xiii) incl. data acquisition software for Windows, TTTR mode, and DLL
- xiv) library for custom programming
- xv) incl. SMA signal cables
- xvi) with at least 4 Marker inputs

C. Components for dual-channel SPAD detection

1) Dual channel detector housing including:

- i) housing for complete optical setup
- ii) interlock for shutters
- iii) housing should be able to accommodate detection filters (25 mm diameter) and dichroic (25.5 x 36 x 1 mm rectangular)
- iv) with FC-APC fiber connector & 50-micron core diameter Multi mode fiber cable
- v) red sensitive SPADs (2nos.) with x-y adjustable focussing optics and mounting material and power supply for SPADs.
- vi) electronic and accessories for SPAD detectors e.g., power supply, fast-gate and signal converter

D. Warranty: 1 year- Complete installation, training, support available locally



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E. Eligibility Criteria:

- 1) The suppliers/ bidders should have installed the system minimum of two places in India.
- 2) Details of installation location, name of the user etc to be mentioned in (Format 3).
- 3) User/Customer feedback will also be considered for technical evaluation.