REF: PH/JKB/ 332/ 2019-20, **Date: 14.6.2019**

Dear Sir/madam,

Kindly send your best quotation for the following item on CIP Bangalore basis. Your quotation should clearly indicate the terms of delivery, delivery schedule, E.D., payment terms etc. The tender should be submitted in two separate sealed envelopes - one containing the technical bid and the other containing the commercial bid, both of which should reach us, duly signed on or before, 8. July, 2019.

TECHNICAL SPECIFICATIONS for Low temperature Photoluminescence Microscope and Spectrometer with time resolved microscopy (FLIM) capabilities

1. Microscope

1.1. Research grade confocal microscope with 6x turret.
1.2. Sample size: 120 mm in x and y direction, 25 mm in z direction, can be adapted to fit larger samples in the z direction.
1.3. Motorized z-stage system, automated approach, specify travel range and step size: Desirable: 30 mm travel range, single step size 10nm.
1.4. Optical resolution: diffraction limited lateral typ. 250 nm @ 532 nm excitation wavelength (with objective NA 1.4) or better.
1.5. Lasers coupled to microscope using single mode fibers.
1.6. Objectives
1.6.1. 10x Air
1.6.2. 50x Air
1.6.3. 100x objectives Air
1.6.4. 50X LWD
1.6.5. 100 x oil immersion objective for inverted beam path
1.7. Overall spectral range of the system considering various components as mentioned below including spectrometer, CCD, etc minimal 400to 800 nm.
1.8. Camera system for sample viewing with the following minimal specs:
1.8.1. 1920x1200 resolution or better.
1.8.2. CMOS based Camera
1.8.3. Ethernet connection
1.9. Kohler White Light Illumination

2. **Large Area Scan Stage**

2.1. Motorized sample positioning stage with x- & y- direction, 25 mm x 25 mm travel (minimal).
2.2. Single step 100 nm.
2.3. Positioning accuracy better than 1µm.

3. **Photoluminescence Imaging Set Up**

3.1. Acquisition of PL spectra at selected areas / Micro PL
3.2. Automated acquisition of PL spectra at each pixel
3.3. PL Spectral Resolution desirable at least 0.04 nm @ 532 nm with 600 g/mm grating or better.
3.4. True Confocal Set up
3.4.1. Confocal microscopy in reflection& transmission modes.

4. **Pulsed Laser (for Time correlated single photon counting & PL Measurements)**

4.1. 405 nm
4.2. Pulse width - <50 ps
4.3. Average Power 50mW
4.4. Pulse repetition rates upto 40 MHz

4.5. Laser must also operate in CW mode
4.6. Include all accessories necessary for integration of laser to microscope.

5. **Pulsed Laser (for Time correlated single photon counting & PL Measurements)**
5.1. 655 nm
5.2. Pulse width - < 50 ps
5.3. Average Power 50mW
5.4. Pulse repetition rates upto 40 MHz
5.5. Laser must also operate in CW mode
5.6. Include all accessories necessary for integration of laser to microscope.

6. **Time correlated single photon counting (TCSPC)**
6.1. Modes of operation
6.1.1. time resolved luminescence microscopy (TLM)
6.1.2. fluorescence life time imaging (FLIM)
6.1.3. Appropriate Single Photon Counters
6.1.4. Dark counts < 50 counts/s
6.1.5. Specify Spectral Range: Preferred Spectral range: At least 400 - 1050 nm or larger.
6.1.6. Timing resolution of electronics down to 30 ps or better.
6.1.7. Fully integrated into the main control software

7. Spectrometer
7.1. Focal length ≥ 300 mm
7.2. Three or more gratings – 300, 600&1200 g/mm grating, preferred.
7.3. Specify spectral range; Preferred Spectral range: at least 400 - 850 nm or higher.
7.4. Fiber Coupled
7.5. USB interface.

8. Peltier cooled CCD camera
8.1. Pixel Size 30 µm x 30 µm or better.
8.2. QE_{max}> 60 %,
8.3. USB interface.

9. **Controller–** Suitable Controller & Computer system, compatible with the set up should be provided.

9.1. **Software – Single** control software for PL and Time Resolved Measurements.Offline data valuation software that can installed on an unlimited number of computer systems. Required data analysis software with extensive capabilities should be included. Ideally the software provided should be Windows based.

10. **System compatible for use with Low Temperature Cryostat** Temperature range: 3.2 K - 500 K. If an adapter / mechanical device for mounting the sample on the motorized XY stage is required the same needs to be provided.

11. **Illumination setup for fixed and scanned bottom far-field illumination and near-field detection including** single mode optical fiber coupling attached to scan stage, Collimation and focusing optics attached to scan stage & Positioning and focusing of excitation laser spot via inertial drive. Required inverted beam path should be included.

12. Suitable stable platform to mount the system as required should be included.

13. Other essential accessories like the following to be specifically included:
13.1. Computer - with the latest configuration
13.2. 27” LCD monitors.
13.3. Laser Power Meter

14. **Installation and training**

14.1. On-site Installation and Training by an experienced engineer.

15. Warranty standard one year should be included with the system. Extended warranty for additional two years should be offered separately for each year.
16. Quote separately for optional items like additional modes of operation (eg. Raman or two photon correlation measurements, etc). Include all items required for each of these modes as part of integrated packages for each such quoted items. Specify full details of operation of these modes apart from their separate pricing.

Terms and conditions:

1. Two-bid system (separate technical and financial bids) in sealed tenders.

2. The technical bid must clearly specify the prescribed technical specifications without including the prices. Please provide in detail the specifications under each subhead and bullet point. Unique characteristics may be highlighted.

3. Vendors who include price information in the technical bids will be automatically disqualified.

4. After technical evaluation by a committee, vendors may be asked to re-quote in a specific format to facilitate comparison of prices.

5. Price bids of only technically qualified vendors will be considered.

6. The price bids must offer CIF Bangalore prices.

7. Indicate separately price of spares listed above in terms of unit cost. The price of these spares will be included in the price comparison. Any additional spares recommended by the company will be considered for ordering but not included in the comparison. The buyer reserves the right to make the final decision on ordered spares.

8. IISc also reserves the right to cancel the tender at any time without assigning any reason whatsoever.

9. Indicate delivery period.

10. Order will be placed on lowest bid from technically qualified vendor.

11. The tender documents can be sent at the following address:

The Chariman
Department of Physics
Indian Institute of Science, Bangalore 560012
Karntaka (INDIA)
Kind Att: Prof. Jaydeep K Basu.