Indian Institute of Science Bangalore

Prof. Mayank Shrivastava
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Indian Institute of Science Bangalore
560012, Bangalore, Karnataka, India

Inquiry Number: DESE/JK/MSA/011/2019-20
Dated: 11/08/2019

Request for Quote for the procurement of a High Resolution Thermoreflectance Thermal Microscopy System

Indian Institute of Science, Bangalore
(Last Date: August 26th, 2019)

Dear Sir/Madam,

Kindly send your best price quotation for the following item with various accessories on C.I.P. Bangalore basis to the undersigned. Your quotation should clearly indicate the terms of delivery, delivery schedule, entry tax, payment terms, etc.

Your quote should also include mode of payment and **should reach the undersigned, duly signed on or before 1000 hours (IST) on July 26th, 2019.**

The quote must include all details of technical specifications of the equipment along with the commercial terms and conditions, the bill of materials, printed technical brochure and any other supporting document. Vendors will be required to submit a technical proposal and a commercial proposal in **two separate sealed envelopes**. **Please enclose a compliance certificate, printed on your letter head, along with the quote.**

The quotation should address to:

The Chairman,
Department of Electronic Systems Engineering
Indian Institute of Science, Bangalore – 560 012

I. Technical Specifications of High-Resolution Thermoreflectance Thermal Microscopy System

General Description:

1. System must be based on Thermoreflectance principle.
2. Equipment capable of thermal imaging (2D) of semiconductor devices such a Si, GaN, GaAs, etc., with nano-second time resolution and sub-µm spatial resolution.
3. It should be mounted on a 6” probe-station with industrial microscope. It should have auto-focus chip level calibration tool/stage.
4. The system must be fully automated in terms of thermal imaging and control.
5. The system must come with multiple (min. 8) pulse LED sources, ranging from NUV to NIR, which can be controlled / operated automatically using the control software. Should allow automatic wavelength selection.
6. It should have integrated function generator with Transient Imaging Module. Should be able to capture pulse transients.
7. The CCD should be capable of covering the entire spectral range.
8. System must have well defined calibration procedures and protocols for the thermal imaging of different semiconducting materials.
9. System should have possibility of both front side and back side imaging.
10. System should accept external trigger and should allow external pulse supply.
11. System should also have an inbuild pulse supply for it’s smooth operation.
12. All required cables, accessories, calibration kit and other required items to run the system must be provided

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13. Should cover a large temperature range. (Specify)

Specific Description:

Camera Sensor	CMOS
Active Thermal Pixels	2048 x 2048 (4 MP)
Detector Pitch	5.5 µm
Spectral Range	(NUV) 365 nm to 800 nm (preferably up to 1000nm)
CCD Interface	USB 3.0 High Speed Acquisition
LED Illumination	405 nm, 470 nm, 530 nm, & 780 nm
System Rack	Required size for the system
PC for the control software	PC with 4K 30 inch Monitor, Keyboard and mouse etc.
Industrial Microscope with Objectives and Manual Mirror Switcher	5x, NA=0.15, WD=35.1 mm 20x, NA=0.40, WD=22 mm 100x, NA=0.52, WD=14.1 mm (Mirror Switcher to connect two CCDs at a time)
NUV Objective	50X (Quote as optional Item)
NIR Objective	Quote available Options as an optional item.
Field of View (FOV)	2.25 mm x 2.25 mm w/5x objective
Software control with PC	Controller with embedded software for system management, image data collection, and data processing and analysis
Auto Focus Chip Level Calibration Tool	To achieve 5% absolute temperature accuracy with small size. Includes: 3-axis Piezo fixture stage and controller, Thermal chuck with 18ºC to 33 ºC temperature range with 0.5 x 10^{-}accuracy, 20µm travel, x-y correction to <100 nm
LED illumination Source with Automatic wavelength selection using software control	365nm, 405 nm, 470 nm, 530 nm, 625nm, 780 nm, 940nm and 1050nm
Probe Station	6 inch probe station with co-axial Vacuum Chuck and 4 micro-positioners. Necessary Vibration Isolation Table should be provided.
PERFORMANCE	
Spatial Resolution	Diffraction limited: 389 nm (LED=405 nm, 100x, NA=0.52) <300 nm (LED=365 nm) with optional NUV Enhancement Upgrade
Pixel Resolution	55 nm per pixel at 100x

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NETD[1]	250 mK
Transient	Resolution: 12.5 ns Delay 50 ns Pulse Duration (FWHM)
Capability to evaluate following substrates	Silicon, GaN

II. Mandatory Requirement: The vendor must have more than 5 years of history of manufacturing above stated equipment and selling it to industries and universities all around the world. The vendor must provide detailed evidence of this (example: list of groups using this equipment, equipment picture, company history, etc.). The vendor must also have a distributor in India who should be well trained to operated and maintain this equipment.

III. Additional Items (Must be added to compliance certificate as well):

1. Support: Please provide details of support provided within the warrantee period
2. Shipping: The cost of shipping up to Bangalore Airport should be included in the quote. IISc Bangalore will help with customs clearance at Bangalore Airport.
3. Installation: Please list a set of acceptance tests for on-site (vendor) inspection and after installation at IISc Bangalore.
4. Other Options: Necessary spare parts should be quoted as an option.
5. Please include any other options currently available that can be added on in the future.
6. Training: Please highlight the extent of training provided as part of this purchase and for how many days.

IV. Optional Items:

1. Please provide separate letter indicating annual maintenance charges (AMC) post warrantee / guarantee period.

All of the above mentioned technical specifications are highly desired. However, lower technical specifications may be considered if the above mentioned specifications are found to be unsuitable in financial terms. The Institute reserves the right to go for lower specifications taking into consideration its technical preferences and financial constraints. Vendor is encouraged to highlight the advantages of their tools over comparable tools from the competitors.

Terms and conditions (should be included in compliance certificate):

1. In principle onsite installation should be free of cost.
2. Software upgrade, if any, must be free of cost for next 5 years.
3. The vendor must assure that there are no bugs and glitches with the integration and characterization software. In case of glitches or bugs, vendor must fix the issues in less than 7 days.
4. In case of software issues or support, vendor should be able to provide required solution within two days.
5. All equipment must be well calibrated. Calibration capability must be available in India.
6. Additional quote for an annual maintenance contract should be included for the next 5 years.
7. The vendor should have a good track record of delivering such equipment at universities/research institutions (please furnish the details).
8. Please provide list of customers who have procured your equipment in last 5 years.
9. The vendor should be able to repair, maintain and upgrade the equipment, once it is installed in India. No travel claims must be made by vendor for servicing during the warrantee/guarantee time.
10. The lead time for the delivery of the equipment should not be more than 8 week from the date of receipt of our purchase order. The smallest lead time will be appreciated. Our expectation is shipment immediately after PO and payment post installation.
11. On all systems the payment terms will be specified in the commercial proposal and is subject to negotiation.
12. The validity period of the quotation should be 90 days atleast.

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13. Please provide details of the number of trained personnel in India, number in the southern region or in Bangalore who can service the machine.
14. In case of proprietary system, please give a certificate.

Sincerely,

Prof. Mayank Shrivastava
Associate Professor
Department of Electronic System Engineering
Indian Institute of Science
Bangalore, Karnataka 560012, India
Secretary (Ms. Supria's) Contact: 9972092771
(On Behalf of Purchase Committee)