



Indian Institute of Technology Jodhpur

N.H. 62, Nagaur Road, Karwar, Jodhpur - 342030, Rajasthan (India)

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Website: www.iitj.ac.in/enauto | IITJ: www.iitj.ac.in

INDIAN INSTITUTE OF TECHNOLOGY JODHPUR

Request For Technical Information and Pro Forma Quotations

For Procurement of Confocal Raman Microscope

1. Introduction

The **Indian Institute of Technology Jodhpur (IIT Jodhpur)** intends to procure a **Confocal Raman Microscope** for advanced research in engine exhaust particle emissions, transient emission measurements, and vehicle emission characterization. Before initiating the formal procurement process, the Institute invites **Technical Information** and **Indicative Pro Forma Quotations** from eligible **Original Equipment Manufacturers (OEMs)** or their authorized representatives for supplying the system along with all necessary accessories, software, installation, commissioning, and training.

2. Purpose

The objectives are to:

- Obtain technical information from prospective OEMs/authorized representatives.
- Obtain indicative Pro Forma Quotations for estimating the procurement cost.
- Identify suitable systems for real-time engine exhaust particle size distribution and concentration measurements.
- Evaluate available technologies for transient particle emission measurements from internal combustion engines.
- Assess compatibility with engine testing facilities, and combustion laboratories planned at IIT Jodhpur.

3. Disclaimer

This document is issued **only for obtaining technical information and indicative Pro Forma quotations**.

Submission of information under this proposal:

- shall **not** be treated as a financial bid;
- shall **not** constitute any commitment on the part of IIT Jodhpur to procure the equipment;

4. Equipment Details

- Name of Equipment: **Confocal Raman Microscope**



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- Quantity: 01
- Broad Functional Requirements:
Attached

(The above requirements are indicative and may be revised after evaluation of the responses.)

5. Eligibility Criteria

Interested firms should:

- Be an Original Equipment Manufacturer (OEM) or an authorized distributor/dealer.
- Have experience in supplying similar equipment.
- Have adequate installation and after-sales service support in India.

6. Information/Documents to be Submitted

The interested firms shall submit the following (*Annexure-I*):

1. Company Profile.
2. Details of the OEM.
3. Product Brochure/Catalogue.
4. Detailed Technical Specifications.
5. Compliance with the Broad Functional Requirements.
6. List of previous users/clients with installation reports
7. Details of Warranty.
8. Details of After-Sales Service Support.
9. Authorization Letter from OEM (where applicable).
10. Any additional technical information relevant to the offered equipment.

7. Pro forma Quotation

- Interested firms are requested to submit a Pro forma Quotation (*Annexure-II*) along with their Request for Technical Information and Pro Forma Quotations response. Indicative **Pro Forma** quotation in Indian Rupees (INR), including the cost of the equipment, essential accessories, taxes, duties, freight, insurance, installation, commissioning, training, and any other associated charges. Wherever applicable, the Annual Maintenance Contract (AMC) and/or Comprehensive Maintenance Contract (CMC) charges and spare parts shall be quoted separately as additional charges.
- Expected delivery schedule and other relevant technical and commercial information.



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Important Note:

- The **Pro Forma** quotation is required only for cost estimation and budget planning purposes.
- The prices quoted shall be indicative/ non-binding.
- The Pro Forma quotation shall not be treated as a financial bid.
- Submission of a **Pro Forma** quotation shall not confer any right or preference in the subsequent procurement process.

8. Presentation/Demonstration

The Institute may invite for a technical presentation or product demonstration. The date and venue shall be communicated separately.

9. Submission:

Interested firms may submit their Proforma Quotations on or before the due date in sealed cover or through email (as applicable).

The envelope/email should be superscribed as:

"Request For Technical Information and Pro forma Quotations for Procurement of Confocal Raman Microscope"

8. Important Dates

Activity	Date
Publication	23-07-2026
Last Date for Submission	07-08-2026
Technical Presentation (if required)	To be informed
Clarification Meeting (if required)	To be informed

10. General Terms & Conditions

1. This **Request for Technical Information and Pro forma Quotations** is issued only for obtaining technical information and **Pro Forma** estimates.
2. The Institute reserves the right to accept or reject any or all responses without assigning any reason.
3. Submission of a **Request for Technical Information and Pro forma Quotations** does not create any contractual obligation.
4. The Institute may seek additional information, technical clarifications, demonstrations, or presentations from any participant.
5. The Institute may modify the technical requirements based on the responses received.



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6. The final technical specifications may be prepared by the User Committee after evaluating all **Request for Technical Information and Pro forma Quotations** responses.
7. The subsequent procurement, if any, shall be carried out through an appropriate procurement method in accordance with the GFR 2017 and applicable procurement rules.
8. Participation in this **Request for Technical Information and Pro forma Quotations** does not automatically entitle any firm to participate in or receive any preference during the subsequent tender process.

11. Contact Details

Name: Dr Neha Jain

Designation: Associate Professor

Department: Bioscience and Bioengineering

Email: njain@iitj.ac.in



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Annexure-I

Request For Technical Information and Pro forma Quotations Response Format

1. Name of the Firm:
2. Registered Address:
3. Name of OEM (if applicable):
4. Contact Person:
5. Email:
6. Phone:
7. Product Name and Model:
8. Brief Technical Description:
9. Compliance with Broad Functional Requirements:
10. List of previous users/clients with installation reports:
11. After-Sales Service Details:
12. Any Additional Features:
13. Remarks (if any).



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Annexure-II

Format for Pro forma Quotation

Sl. No.	Description	Amount (INR)
1	Indicative Pro forma quotation in Indian Rupees (INR), including the cost of the equipment, essential accessories, taxes, duties, freight, insurance, installation, commissioning, training, and any other associated charges.	

Warranty Period: _____

AMC/CMC Charges (after warranty): _____

Delivery Period: _____

Authorized Signatory

Name: _____

Designation: _____

Company Seal & Signature



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Technical Specifications - Confocal Raman Microscope

A high-resolution Confocal Micro Raman Spectrometer system must include three lasers (633, 785 & 488/514/532) detectors, optics, a microscope, mapping stage, heating and cooling stage, polarization kit with software, a workstation, and necessary accessories for complete functionality.

Specifications	Description
Raman System & Spectrometer	● A research grade confocal Raman imaging spectrometer with refractive optics. ● All necessary optics, filters, and gratings required for laser excitation sources. ● Spectrometer Range: 220 nm to 1600. ● The complete instrument should be a single integrated unit and not an assembly of different parts. ● Minimum 3 grating ranging from 1000 gr/mm to 3000 gr/mm ● Single continuous acquisition, without spectral stitching while covering full Raman range while maintaining $\leq 1 \text{ cm}^{-1}$ spectral resolution. ● The spectrometer should be able to mount detectors in the future. ● Real time automated focusing
Resolution	● Spatial Resolution: 300 nm or better ● Axial Resolution: 1.5 micron or better ● Able to achieve a spectral resolution of $\leq 0.5 \text{ cm}^{-1}$ under defined optimal conditions (e.g., with a 532 nm laser and an appropriate grating), with the resolution clearly specified for each excitation wavelength and grating combination ● Spectral Accuracy: $\pm 0.1 \text{ cm}^{-1}$ over the full range, through an automated, traceable calibration method
Lasers	● Optical Coupling: All the lasers should be directly coupled to the Microscope/spectrometer through free space optics without any fiber coupling. ● Polarization ready Diode Lasers with TEM00 mode. ● Power source: 50 mW or higher ● Spectral Bandwidth $< 1 \text{ MHz}$ ● Spectral purity: Laser line filter OD > 8 ● Edge filters (Raman Spectral Range: $100 \text{ cm}^{-1} - 4000 \text{ cm}^{-1}$) depending on the laser wavelength ● Laser power attenuation through set of Neutral density filters between 0.0005% to 100% of the laser output power



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	• The system must have provision for automated alignment of laser light path of the instrument. • The laser spot size should be visible in the video image • Software-controlled laser switching
Microscope specification	• A research-grade upright microscope with binoculars and a USB-PC-controlled high-resolution color video camera for viewing. • LED white light reflection illumination with intensity software-controlled • Objectives: 5X, 20X, 50X LWD, 80X LWD, 100X LWD Infinity corrected objectives. • XYZ Mapping Stage: - Automated high speed optically encoded feedback-controlled • Motorized Travel range of the stage in X-Y-Z: 100 mm x 75 mm x 25 mm or better. • Minimum step size in X-Y: 50 nm or better, and Z: 10 nm or better. • High Resolution fast mapping by illuminating laser spot on the samples with spatial resolution down to 300 nm.
Detector for Confocal Raman Imaging	• Spectral Range: 400 nm to 1050 nm or better. • Thermoelectrically cooled CCD with a cooling temperature of -70 deg C or better for high sensitivity and S:N ratio in the Raman spectrum. • S:N for 3rd order band of Si should be atleast 15:1 or better • Spectral acquisition rate upto 1000 spectra / second or better. • Pixels: 1024 x 256 with each pixel having an area of 625 μm^2 or higher • The detector shall have a peak quantum efficiency of >70% and the QE curve must be provided to assess suitability for the required spectral range • Motorized pinhole as well as slit in the spectrometer for optimized performance. • The system must be equipped with filters providing an optical density (OD) of ≥ 6 at the laser line to ensure effective Rayleigh scattering rejection
Instrument Alignment and Calibration	• Software controlled alignment for lasers, Raman emission, and visual beam paths to microscope cross hairs should be available. • Wavelength calibration • Laser frequency calibration • Intensity calibration
Additional Accessories	• Temp range : -196 °C to +600 °C (cryogenic to high-temperature)
Polarization Kit	• Polarisation Optics • HWP and QWP on laser path. • HWP and Analyzer on Raman Path • Dual polarization detection



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Software	● Windows based instrument control, data acquisition and analysis software. ● 3D topography of the rough surfaces ● Raman and PL mapping and analysis software
Computer	The desktop computer with intel core-i7 or higher processor, keyboard, and Mouse. ● 16 GB RAM or better, ● 512 GB SSD or better ● 27-inch flat panel wide screen Monitor
Warranty	● 3 year warranty & 2 year AMC