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Form for Inviting Quotations

Reference No. AS/DST-TDT/2018/GM

Date: 26-12-2017

Subject: Supply and Installation of equipment for lab use by Indian Institute of Technology Madras

Quotation Due Date: 15-01-2018

Dear Sirs:

Quotations are invited for supply and installation of the equipment as per details in Annexure-I under the following terms and conditions.

Terms and Conditions (Foreign Vendors/Suppliers):

1. The total amount indicated is Ex. Works / FOB / CIF. Madras Value.
2. The consignment to be addressed to **Dr. Ashis Kumar Sen, 213 Turbomachines Lab, Department of Mechanical Engineering, I.I.T. Madras, Chennai – 600 036, India.**
3. The consignment to be dispatched by surface / Air Post Parcel / Ocean Freight / Air Freight.
4. Please send three advance copies of Invoice direct to us immediately after dispatch to avoid delay in clearance. DEMURRAGE CHARGES, IF ANY, PAYABLE ON ACCOUNT OF DELAY IN RECEIPT OF ADVANCE COPIES OF INVOICE WILL BE DEBITED TO YOUR ACCOUNT.
5. The following set of documents is required in all cases:
 - a. Complete set of Clean Bill of Lading / Airway Bill / Air or surface Parcel Receipt, showing that the goods have been shipped and freight prepaid.
 - b. Insurance Policies / Certificates in duplicate covering Marine Insurance as per Institute Cargo Clauses (All risks) and perils as per Institute Strikes, Riots and Civil Commotion Clauses, War risks as per Institute, Clauses. Cover for CIF value plus 10 percent.

General Terms and Conditions:

1. The Quotations duly sealed super scribed on the envelope with the reference No. and due date, should be addressed to the undersigned so as to reach him on or before the due date stipulated above.
2. The quotations are invited as two-bid system i.e., technical bid and financial bid.
3. The Quotations should be valid for sixty days from the due date and the period of delivery required should also be clearly indicated.
4. If the item is under DGS&D Rate contract No. and the price must be mentioned. It may also please be indicated whether the supply can be made direct to us at the Rate contract price (Please note that we are not Direct Demanding Officers). If so please send copy of the RC.
5. Relevant literature pertaining to the items quoted with full specifications (and drawing, if any) should be sent along with the Quotations, wherever applicable. Samples if called for, should be submitted free of charges, and collected back at the supplier's expense.



6. Local Firms: Quotations should be for free delivery to this Institute. If Quotations for Ex-Godown delivery charges should be indicated separately.
7. Firms outside Madras: Quotations should be for F.O.R. Madras. If F.O.R. consignor station, freight charges by passenger train / lorry transport must be indicated. If Ex-Godown, packing, forwarding and freight charges must be indicated.
8. The rate of sales / General Taxes and the percentage of such other taxes legally leviable and intended to be claimed should be distinctly shown along with the price quoted. Where this is not done, no claim for Sales / General Taxes will be admitted at any stage and on any ground whatsoever. The taxes leviable should take into consideration that we are entitled to have concessional Sales Tax applicable to non-Government Educational Institutions run with no profit motive for which a concession. Sales Tax Certificate will be issued at the time of final settlement of the bill.
9. Goods should be supplied carriage paid and insured.
10. Goods shall not be supplied without an official supply order.
11. Payment : Every attempt will be made to make payment within 30 days from the date of receipt of bill / acceptance of goods, whichever is later

ANNEXURE-I

TECHNICAL SPECIFICATIONS FOR PURCHASE GONIOMETER – DROP SHAPE ANALYSER TO MEASURE CONTACT ANGLE, SURFACE FREE ENERGY AND SURFACE/ INTERFACIAL TENSION OF FLUIDS USING PENDANT DROP METHOD

S. No.	Basic	Description	Quantity
1	General	Goniometer based on drop shape analyser should be able to do fully automatic measurements of contact angle, surface free energy and surface/interfacial tension of liquids based on pendant drop method.	1
2	Stage size (L x W)	100 x 100 mm ²	
3	Sample size (L x W x H)	320 x ∞ x 165 mm ³	
4	Stage movement	Travel range in Z axis – 38mm or higher	
5	Optics and Image processing system	Camera connection to have USB 3.0 port for better speed. It should be able to capture videos at i. 150 fps (1200 x 1200 pixels) ii. 500 fps (1200 x 350 pixels) iii. 800 fps (1200 x 200 pixels) iv. 2000 fps (1200 x 60 pixels). Optional : To Capture video at 3400 fps at 640 x 50 px Camera should have 6.5 fold zoom lens or better with fine focussing. It should be illuminated with high power monochromatic LED and to have field of light ϕ 40mm or higher. And to have IR-CUT filter for elimination of optical disturbances.	
6	Dispensing system	<u>Software controlled:</u> 2 syringe dosing which can be software controlled for both glass & disposable syringes.	



		Dosing rate : 10-1400 μ l/min Resolution : 0.1 μ l <u>Manual controlled:</u> 1 syringe which can be manually dosed.	
7	Software – Contact angle module	To determine static and dynamic contact angles using sessile drop and captive bubble methods. To control camera, illumination, temperature, dosing modules and table movements. To measure, store and report measured contact angle values. Supported models: Conic Section, Polynom, Circle, Young-Laplace and height-width Measuring range: 0-180° Resolution : 0.01° Accuracy : 0.3°	1
8	Software – Surface and Interfacial tension module	To determine surface and interfacial tension of liquids by analysis of pendant drop and rising drop. Supported model : Young-Laplace Measuring range : 0.01-2000 mN/m Resolution : 0.01 mN/m Accuracy : 0.3 mN/m	1
9	Software – Surface free energy of solids module	To determine Surface free energy. Supported models: Equation of states, Zisman, Fowkes, Wu, Owens-Wendt-Rabel-Kaelble, Schultz-1, Schultz-2, Extended Fowkes and Acid-base theory.	1
10	To be provided as optional - Temperature chamber and Humidity control unit	Environmental Chamber, controlled by liquid thermostat, min./max. allowed flow temperature: 5°C (278 K) / 90°C (363 K), with inert gas inlet, made of high quality plastics for improved insulation, consisting of: <ul style="list-style-type: none"> • 1 Temperature Chamber with 3 windows of optical special glass, with gas-rinsing of windows to avoid condensation • 1 internal sample stage moveable across the optical axis for sample positioning without opening the chamber Humidity control unit to measure relative humidity 15-85 % at 22°C, up to 89% at 10°C-15°C, down to 5% at 70°C-90°C with response time 20-300 s.	1