INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
MATERIALS MANAGEMENT DIVISION
Powai, Mumbai 400076.

Ref. PR No. 1000044532 Rfx. No. 6100002228

Item Description: Contact angle Analyser – 1 No.

Sr. No	Item Description	Detailed Technical Specification	Technical Compliance (Yes / No)	Additional Information (if any)
1.	General features	a) The instrument should be automated optical system to measure the Contact angle, surface tension, Surface free energy of liquid and Solids by Pendent Drop method and sessile drop. Powder sample analysis should be available.		
2.	Parameters to be measured	a) Determine surface and interfacial tension of liquid using pendent drop method. b) Surface Free Energy of solids in terms of Polar & Dispersive components, its acid and base components as well as its hydrogen bonding components, according to 8 different models with wetting envelope. c) Static & Dynamic Contact Angle according to sessile drop method.		
3.	The instrument should be capable and conform with the adjacent specifications and features:	a) Measuring range surface tension: 0.01-2000 mN/m b) Accuracy: 0.2 mN/m c) Resolution: ±0.01 mN/m d) Measuring range of the Contact Angle: 0° - 180° e) Accuracy 0.02° or better f) Resolution: ± 0.01° or better		

		g) Surface free energy module to determine SFE on solid sample.		
4.	Camera System:	a) LED lighting with two steps manual intensity control with integrated light blind, vertically adjustable. b) Optical system with zoom (6.5x) lens, continuously variable, with fine focus c) Sensor 11 x 7 mm / 1/1.2" CMOS d) USB Camera: maximum frame rate 2300 frames/sec, resolution of 1920 x 1200 pixel or better, Field View range 3.2 x 3.2 to 18.5 x 18.5 mm or better e) Flexibility to adjust the camera angle ± 3° with vernier scale. f) IR cut filter for elimination of optical disturbances. g) High FPS video recording		
5.	Sample stage	a) z-Axis-manual with flexible positioning in x/y-direction, with 45 mm movement in z-direction, up to 5 kg Axes and sample stages		
6.	Dispensing System:	a) High Precision software controlled Direct Dosing system without any tubing. Dosing rate of 0.02 to 25 µL/s with 0.1 µL resolution b) Manual single syringe dosing unit, with micrometer screw, for disposable and glass syringes c) **Used for:** Sessile Drop static & dynamic, Pendant Drop, Captive Bubble, Rising Drop Dosing system must have necessary needles (min 30 no's) of different type and dimensions to work with various liquids. J shape liquid needle for IFT measurement		
7.	Software	a) Windows based Software should be offered for following operations: i. Main Software to record / store image sequences of the analysis		

		with automatic controlling of the syringe unit. ii. The software should be able to control the camera. iii. The software should be able to measure the Surface & interfacial tension of liquid- air and liquid-liquid interfaces iv. Software should be able to measure the static, advancing & receding contact angle on plane, concave and convex surfaces. v. Software should be capable for automatic measurement of the contact angle hysteresis and to record/store of image sequences with statistics and measurement error analysis. vi. Liquids and solids database must be incorporated in the Software. vii. The software should be able to calculate the Surface free energy using 8 different theories.		
8.	Accessories	a) Glass Syringe - 2 units b) Disposable syringes -100 units c) One set of needles with a total of 60 needles (10no's each of 6 type) d) Controller PC with i5 processor, 16GB RAM, 500GB SSD, 23inch display, keyboard and mouse along with Window OS 10/11, 64 bits.		

9.	The offered system must be upgradable for adjacent features:	a) The unit should be able to incorporate the various environmental chambers to work in different environmental conditions. b) The unit should be upgradable for electro-wetting studies. c) The unit should be able to mount the software controlled tilting platform to tilt the complete unit up to 90Deg d) System should be upgradable for pressure condition measurement up to 40bar. e) Unit should be upgradable for adhesion analysis.		
10.	Warranty	a) 5-years comprehensive warranty		