RAJIV GANDHI INSTITUTE OF PETROLEUM TECHNOLOGY, JAIS, AMETHI

CORRIGENDUM-1

Date: 25.06.2019

Please refer to E-Tender on RGIPT/JAIS/E-OPN/LAB/2019-20/10 in rgipt.euniwizarde.com portal & Institute Website for the procurement of SURFACE TENSIOMETER WITH HIGH TEMPERATURE CONTROL.

Name of Equipment	SURFACE TENSIOMETER WITH HIGH TEMPERATURE CONTROL
Submission Date	24.06.2019 (Monday) before 3pm
Date & Time of Opening of Techno- Commercial bid	24.06.2019 (Monday) at 4pm
Revised Submission Date	11.07.2019 (Thursday) before 3pm
Revised Date & Time of Opening of Techno- Commercial bid	11.07.2019 (Thursday) at 4pm

SPECIFICATIONS FOR FULLY AUTOMATIC & MODULAR SURFACE TENSIOMETER WITH MEASUREMENT OF CMC AND ELECTRICALLY HEATED TEMP. CONTROL SYSTEM

The instrument should be modular and fully automatic for measurements of surface tension, interfacial tension and fully automatic determination of CMC with Temp. Control jacket and in built magnetic stirrer. Measuring compartment should be illuminated and all Control with Display should be by PC through software. The instrument should be designed with automatic crash protection for measuring probes during measurement.

A. The Tensiometer should have the capability of measuring:
- Surface Tension, Interfacial Tension with the help of Wilhelmy plate and Du Noüy ring
- The instrument should be capable of measurement of Fully Automatic Measurement of CMC
- The instrument should be capable of redosing during CMC measurement in combination with programmable Liquid Dispensing Unit.
- The instrument should be capable and upgradable of measuring Contact Angle of Solids in plate form

B. Automatic Surface Tensiometer should conform the specifications as follows:

Method of Measurement: Ring and Plate measurement using Electronic Balance only
Measuring range for surface and interfacial tensions: 1 … 2000 mN/m ;
Resolution: ± 0.001 mN/m
Measuring range for contact angles: 0°… 180°; (0° to 90° for Washburn Method)
Resolution: ± 0.01°
Weighing range: 10 µg … 210 g
Weighing Resolution: 10 µgm
Balance Locking & Unlocking: Locking and unlocking of the Balance should be automatic and Software Controlled
Measuring value range: Up to 50 Data per second
Movement of Table: Should be electrically driven & software controlled
Travel speed of sample table: 500 nm/sec to 500 mm/min
Travel Resolution: 100 nm
Programmable travel range for sample table: 105 mm
High Temp. Control: Through Electrical Temp. Control System with temp. range up to 250°C should be offered
Temperature Measurement: Temperature measurement and digital display should be through an intuitive control panel with touch screen
Calibration: Should be automatic and software controlled through In – Built and External Standard Weight
Interfaces: Through USB Port to connect to Data Station
Power Supply: 230V, 50 Hz

C. Following accessories should be offered:
   a. Six Nos. Sample Vessel with 70 mm Dia suitable for SFT and IFT, made Borosilicate glass
   b. Wilhelmy Plate
   c. Du Noüy-ring
   d. Sample holder for solids in plate form
   e. Electrically Heated High Temperature Control System with Temp. ranging upto 250ºC
   f. Software controlled Liquid Dosing System for fully automatic measurement of CMC

D. Following Software Modules should be offered
   1. Software Module for Surface Tension and Interfacial Tension

   a. Measurement of the static, time and temperature dependent surface and interfacial tensions according to the Du Noüy Ring method and Wilhelmy plate method
   b. Lamella breakpoint test to determine the surface elasticity
   c. Automatic ring corrections according to Zuidema & Waters, Mason &Huh and Harkins & Jordan
   d. Gas, liquids and solids data base

   2. Software Module for Contact Angle
   a. Force-based measurement of the dynamic contact angle of prismatic and cylindrical solids (e.g. plates, films, rods and single fibers) as well as the wetted length according to the Wilhelmy method.
   b. Analysis of the surface free energy of solids as well as their components (e.g. dispersive, polar and hydrogen bond parts, acid and base portions, respectively) according to nine different theories.
   c. Calculation of work of adhesion
   d. Adsorption measurement on powders and fiber bundles with the determination of the average contact angle according to the modified and the extended Washburn method
   e. Analysis of the surface free energy of solids as well as their components (e.g. dispersive, polar and hydrogen bond parts, acid and base portions, respectively) according to nine different theories.
   f. Calculation of work of adhesion

   3. Software Module for Fully Automatic Determination of CMC
   a. Fully automatic determination of the critical micelle formation concentration of surfactants (CMC) in both forward and reverse mode
   b. Calculation of the minimum surface tension in case of synergistic effects of surfactant mixtures
   c. Calculation of the space required by molecules on the surface
   d. Calculation of the free adsorption energy after Gibbs
   e. Calculation of the surface excess
   f. Access to the gas-, liquids- and solids data base
   g. Control of the liquid dosing devices for additive and subtractive dosing
   h. **Computer Specifications:** 22 Inches or better, 1920x1080 or better, Intel core i5 (7th or latest generation), RAM:4 GB and upgradeable further, DDR4 or better, 1 TB or better, Mechanical Hard Drive, Wi-Fi, Bluetooth 4.0, Number of USB 2.0 ports :2; Number of USB 3.0 Ports: 1,Wireless Keyboard and Mouse, Operating system :Windows 1064 bit
   • Multifunction Laserjet Color Printer and 5 KVa UPS

   A. On-site Installation and Training free

   B. Two years on-site warranty with spares.

   C. Three years CMC

Note: Highlighted portions are the changes in conditions. The other terms & conditions remain unchanged.

This issues with the approval of Competent Authority.

Sd/-

Assistant Registrar (Accounts)