

INDIAN ASSOCIATION FOR THE CULTIVATION OF SCIENCE
2A & 2B, Raja S.C.Mullick Road, Jadavpur, Kolkata-700032

Corrigendum of Tender: NIT No.IACS/OC/JG/2017-18/87 Date: 10/01/2018

Technical Bid for purchase of High Resolution Mass Spectrometer HRMS System

	<i>In the Original Tender Notice</i>	<i>After the Pre-bid Meeting</i>
1. Ionization Source :	The instrument must be equipped with combined/dual electrospray ionization (ESI) and atmospheric pressure chemical ionization (APCI) and combined/dual atmospheric pressure chemical ionization (APCI) and atmospheric pressure photo ionization (APPI) as standard capable of handling flow rates upto 2 ml/min. Sample introduction must be possible either directly or combined with suitable liquid chromatographic system automatically through integrated fluidics or via external syringe pump. The combined/dual ionization (ESI/APCI & APCI/APPI) source must operate along with reference spray to facilitate automated accurate mass measurements within single LCMS experiment. The instrument should be capable of internal reference mass correction for MS and MS/MS operation without losing sensitivity. The ionization must be done both in a positive & negative modes. An atmospheric pressure solids analysis probe (ASAP) for the direct sampling and introduction of solids and liquids should be available as an additional source. The ion source must be of dual orthogonal design. The cleaning of the source should be done without venting the system and facility to Vacuum Interlock should be provided.	The instrument must be equipped with dedicated ESI, APCI and APPI sources or combined electrospray ionization (ESI) and atmospheric pressure chemical ionization (APCI), and combined atmospheric pressure chemical ionization (APCI) and atmospheric pressure photo ionization (APPI) as standard capable of handling flow rates 1 ml/min or higher. Sample introduction must be possible either directly or combined with suitable liquid chromatographic system automatically through integrated fluidics or via external syringe pump. The dedicated or combined ionization (ESI/APCI & APCI/APPI) source must operate along with reference spray to facilitate automated accurate mass measurements within single LCMS experiment. The instrument should be capable of internal reference mass correction for MS and MS/MS operation without losing sensitivity. The ionization must be done both in a positive & negative modes. An atmospheric pressure solids analysis probe (ASAP) for the direct sampling and introduction of solids and liquids should be available as an additional source. The cleaning of the source should be done without venting the system and facility to Vacuum Interlock should be provided.
3. Desolvation Temperature	The Desolvation Temperature must be more than or equal to 600 °C.	The Desolvation Temperature must be at least 400 ⁰ C or higher.
4. Quadrupole :	Instrument should have Quadrupole for isolation followed by collision cell and appropriate assembly required for high resolution mass data. An isolation valve/suitable device must be available to allow the source elements to be removed and cleaned without breaking instrument vacuum, maximizing instrument uptime. The routine maintenance should be tool free and user friendly. The instrument should be equipped with a segmented quadrupole collision cell for superior ion transmission characteristics leading to enhanced resolution and sensitivity. Specific design must be shared or submitted which must show the same.	Instrument should have Quadrupole for isolation followed by collision cell and appropriate assembly required for high resolution mass data. An isolation valve/suitable device must be available to allow the source elements to be removed and cleaned without breaking instrument vacuum, maximizing instrument uptime. The routine maintenance should be tool free and user friendly. The instrument should be equipped with a segmented quadrupole collision cell or equivalent technology for superior ion transmission characteristics leading to enhanced resolution and sensitivity. Specific design must be shared or submitted which must show the same.

	Precursor ion selection should be done using Quadrupole. Mass Range: The instrument must have a high mass filter (quadrupole) for efficient transmission of ions having mass range at least 30 to > 30,000 m/z or higher in resolving mode & ≤ 30 to $\geq 1,00,000$ m/z in non-resolving mode or better for QTOF Technology. With Quadrupole & Equivalent TOF Technology the Mass Range must be 6000 m/z or higher.	Precursor ion selection should be done using Quadrupole. Mass Range: The instrument must have a high mass filter (quadrupole) for efficient transmission of ions having mass range in the region 30 to 30,000 m/z or higher in all mode of QTOF Technology. With Quadrupole & Equivalent TOF Technology the Mass Range must be 6000 m/z or higher.
6. Resolution :	The resolution of the TOF mass analyzer must be more than 40,000 FWHM or better between m/z 950-960 and more than 35,000 FWHM or better of around 200 m/z. (Proof of Statement must be provided). In case of Equivalent Technology other than TOF, the resolution of the mass analyzer must be more than 1, 20,000 FWHM or better at around 200 m/z. Data acquisition rate must be 30 Spectra per second or better in MS and MS/MS mode & for Equivalent Technology mass analyzer of minimum 12 Spectra or better. (Proof of Statement must be provided)	The resolution of the TOF mass analyzer must be 40,000 FWHM or better at m/z below 1000. (Proof of Statement must be provided). In case of Equivalent Technology other than TOF, the resolution of the mass analyzer must be more than 1, 20,000 FWHM or better at around 200 m/z. Data acquisition rate must be 30 Spectra per second or better in MS and MS/MS mode & for Equivalent Technology mass analyzer of minimum 12 Spectra or better. (Proof of Statement must be provided)
7. Mass Accuracy & Sensitivity :	The mass accuracy of the system should be a minimum of less than 0.5 ppm, with both internal & external calibration standards for both MS & MS/MS modes on 10 consecutive repeat measurements on column analysis. The instrument must be sensitive enough for detecting sub ppb/femtogram levels of compounds. The sensitivity achieved in MS/MS modes must be stated. The signal to noise (S/N) ratios or counts per second must be specified along with the full analyses conditions. <u>Sensitivity:</u> Full MS/MS mode ≤ 10 femtogram or better on column, at S/N ratio $\geq 600:1$ (Proof of statement must be provided for S/N ratio)	The mass accuracy of the system should be a minimum of less than 1 ppm, with both internal & external calibration standards for both MS & MS/MS modes on 10 consecutive repeat measurements on column analysis. The instrument must be sensitive enough for detecting sub ppb/femtogram levels of compounds. The sensitivity achieved in MS/MS modes must be stated. The signal to noise (S/N) ratios or counts per second must be specified along with the full analyses conditions. <u>Sensitivity:</u> Full MS/MS mode ≤ 10 femtogram or better on column, at S/N ratio $\geq 600:1$ at maximum resolution (Proof of statement must be provided for S/N ratio)
Fast UHPLC System: A liquid chromatography system as an inlet to the Mass spectrometer with following specifications: The chromatography system should be capable of being operated both as a HPLC & Fast UHPLC by interchanging the column chemistries.		
1. Pump :	Quaternary operating pump(s) with an operating pressure of minimum 15000 psi or better.	Quaternary/Binary operating pump(s) with an operating pressure of minimum 15000 psi or better.

Last date and time of submitting tender	February 06, 2018 at 3:00 P.M. □
Date and time of Technical Bid opening	February 06, 2018 at 4:00 P.M. in at CSS Office

Acting Registrar