

**TECHNICAL BID PROFORMA**Tender No. **GTBE/SACH/2023/001/MASSSPECTRO**Item Name: **High resolution mass spectrometer****1.0 Bidder Eligibility Criteria I:**

I	Bidder Eligibility Criteria-I (Public Procurement – Preference to Make in India)	Class I / Class II	Local Content value	Reference, Page No.
I	Only 'Class-I local suppliers' and 'Class-II local suppliers', as defined under DIPP, MoCI Order No. P-45021/2/2017-PP (BE II) dated 16 <sup>th</sup> September 2020 and other subsequent orders issued therein.			

**2.0 Bidder Eligibility Criteria II:**

II	Bidder Eligibility Criteria-II	Complied/Not Complied	Reference, Page No.
1	The bidder/OEM should have supplied at <b>least 3 similar</b> items to IITs, NITs, IISERs, CSIR Labs or other Govt., and R&D organizations in the <b>last 10 years</b> . PO copies or installation certificates along with contact details of end user need to be submitted as the proof of supply. IIT Madras reserves its right to verify the claims submitted by the bidder and the feedback from the previous customers will be part of technical evaluation.		
2	The company should not have been banned/suspended/blacklisted for any reason by any Government Organization/PSU/CSIR lab in <b>last 3 years</b> . Bidders should provide a self-declaration for this point on the company letterhead along with Seal, sign & date ( <b>Annexure VI</b> )		

**3.0 Technical Compliance:**

S.No	Specifications	Requirements	Complied/Not Complied	Reference Page No.
1	System	System should perform VOC measurements based on hydronium reagent ion chemical Ionization mass spectrometry and have high mass and temporal resolution. System should produce hydronium ions based on hollow cathode discharge, with provision to heat the ion source from 50-100 degree Celsius and regulate at set point. The system should be upgradeable to switchable reagent ions to use alternative ions, namely NH <sub>4</sub> <sup>+</sup> , Kr <sup>+</sup> , NO <sup>+</sup> , O <sub>2</sub> <sup>+</sup> etc. in addition to H <sub>3</sub> O <sup>+</sup> ions. so that inorganic compounds like CH <sub>4</sub> , CO, CO <sub>2</sub> , NO <sub>2</sub> , SO <sub>2</sub> can also be detected and quantified using a single instrument. The production of NH <sub>4</sub> <sup>+</sup> reagent ion should not require any toxic gas line ammonia. H <sub>3</sub> O <sup>+</sup> reagent ion purity >98% and for other reagent ion, purity should be >95%		

2	<b>Adjustable Inlet system</b>	Should be able to regulate at set temperatures between 40-150 degree Celsius; Should be able to regulate inlet pressure at 500mbar and above ambient pressures		
		Sample inlet flow should be regulated and adjustable 100ml/min to 800mL/min (temperature corrected).It should be made of inert material (e.g. Teflon and/or PEEK) and fully heated so that there are no cold spots where condensation of sample gas vapors can occur.		
		The system should have built in calibration mode with additional flow controllers to mix/dilute calibration gas and zero air. Calibration gas and zero air must be connected to instrument from external cylinder.		
		Inlet should be made of Teflon or PEEK suitable for VOC analyses with inlet flow as low as 50 ml/minute also possible.		
3	<b>Mass Resolution</b>	System should have a mass resolution better than 6000 (m/Δm) (FWHM) for benzene and higher molecular weight compounds and should have latest technology for Ion focusing and multipole ion guiding system for enhanced sensitivity.		
4	<b>Sensitivity, response, and other requirements</b>	<ul style="list-style-type: none"> <li>i. Mass resolution: &gt; 6000 m/Δm (FWHM) for m/z &gt; 147</li> <li>ii. Response time: &lt; 100 ms</li> <li>iii. Sensitivity: m/z 181 &gt; 2000 cps/ppbv</li> <li>iv. Limit of Detection: &lt; 10 pptv (1 sec), &lt; 1 pptv (60 sec)</li> <li>v. Mass range: 1-10000 amu</li> <li>vi. Adjustable inlet flow: 50 - 800 sccm –</li> <li>vii. Inlet system: Minimum one meter (1 meter) long inlet hose - with inert (PEEK) capillary</li> <li>viii. Inlet system heating: 40-180°C (104-356°F)</li> <li>ix. Reaction chamber heating range: 40 - 120°C (104 - 248°F)</li> <li>x. Weight preferably less than 150 Kg and should be flexible for field measurement campaigns.</li> </ul>		
5	<b>PTR-TOF-MS system</b>	PTR-TOF-MS system should have in built permeation device for mass-scale calibration. System should have Windows based embedded computer with Touch screen controller and display for following parameters: Pressures		
		Voltages		
		pressure controller		
		flow controller		
		temperatures		
		turbo pump parameters		

6	The system should	Automated calibration measurements Automated background measurement Automated switching of - reagent ions between H3O+, NO+ and NH4+		
<b>Terms and Conditions</b>				
7	Warranty	System should be quoted with 12 months warranty covering all major instrument Components including pumps.		

**SIGNATURE OF BIDDER ALONG WITH SEAL OF THE COMPANY WITH DATE**