

21<sup>st</sup> August 2021

**Domestic Tender Notification for the procurement of “Triple Quadrupole Mass Spectrometer” at the Indian Institute of Science, Bangalore**

(Last date of submission of tenders: 12:00 (noon), 10<sup>th</sup> September 2021)

Dear Sir/Madam,

Please submit your bid valid for 90 days to supply the following equipment along with the terms and conditions and other vital information as required by us. Your response may please be addressed to The Chairman, Centre for Ecological Sciences, 3rd Floor, Biological Sciences Building, Indian Institute of Science, Bangalore 560012, Karnataka, India, to reach on or before noon, 10<sup>th</sup> September 2021.

<b>Technical Specifications</b>	
<i>Mass Range, amu</i>	5 -2000 amu
<i>Resolution</i>	Better than Unit mass FWHM(Full Width Half Maximum) < 0.7
<i>Mass Stability</i>	0.05 Da over 12 hours
<i>Sensitivity</i>	<ul style="list-style-type: none"><li>• ESI positive MRM mode on m/z - 609-195 at a unit resolution of 1 picogram Reserpine on column should give S/N ratio &gt;2,00,000:1.</li><li>• ESI Negative MRM mode at a unit resolution of 1 picogram Chloramphenicol on column should have an S/N ratio &gt; 2,00,000:1.</li></ul>
<i>Scan speed</i>	Should have a scan speed of 20,000 AMU per sec or above.
<i>Source Interface</i>	<ul style="list-style-type: none"><li>• Dedicated ESI Ionization Source should be offered.</li><li>• Orthogonal off-axis spray (Electrospray) or any other equally efficient technology capable of avoiding interference from solvents and other extraneous matter.</li><li>• The interface should maintain the cleanliness of ion optics and handle large batches of complex samples.</li><li>• Capable of handling large batches of complex samples for an extended period without performance degradation.</li><li>• Cleaning of the source should be done without venting the system and facility to vacuum interlock.</li><li>• Interface capable of ambient temperature operation and without complex apertures to maintain the structural integrity of thermally labile and fragile molecules.</li></ul>
<i>Polarity switching time</i>	+ve / -ve polarity switching time between alternate MRM scans should be 20 msec or less.
<i>Vacuum System</i>	<ul style="list-style-type: none"><li>• Robust high-efficiency vacuum system with minimum maintenance and utility with low noise level.</li><li>• Vacuum readbacks must be digitally monitored and controlled through software to ensure fail-safe operation in the event of power failure.</li><li>• All accessories required for the proper functioning of the vacuum system should be included.</li></ul>
<i>Quadrupoles</i>	<ul style="list-style-type: none"><li>• High quality mechanical tolerance and minimum coefficient of thermal expansion for high standard of mass stability in varying lab temperature</li></ul>

	<p>conditions.</p> <ul style="list-style-type: none"> <li>• Prealigned filters to ensure excellent focusing of ions into Quadrupoles for high sensitivity and better resolution.</li> <li>• Support to minimize the ion losses for better sensitivity in ion optics.</li> <li>• Neutrals and gas load are passively removed for enhanced transmission with the ions actively transferred into the mass analyzer, improving sensitivity and robustness.</li> </ul>
<i>Collision Cell</i>	<ul style="list-style-type: none"> <li>• To allow very low dwell times allows inter-channel delays (1 millisecond or better) without sacrificing sensitivity.</li> <li>• Eliminate cross talk to enable multiple MRM studies with a single run.</li> <li>• Fast data collection of at least 500 MRM data points per sec or better without compromising performance.</li> <li>• MS and MS/MS along with matrix monitoring to be performed in a single run.</li> </ul>
<i>Gas Control</i>	All gases must be controlled by the software.
<i>Dynamic range</i>	6 orders of magnitude or better.
<i>Operating modes</i>	<p>Mass spectrometer should have the following scan options:</p> <ul style="list-style-type: none"> <li>• Full scan</li> <li>• Selected Ion monitoring/ recording (SIM/SIR)</li> <li>• Product ion scan</li> <li>• Precursor ion scan</li> <li>• Neutral loss scan</li> <li>• Multiple Reaction Monitoring (MRM)</li> <li>• MS and MS/MS in a single injection with matrix background monitoring)</li> <li>• Simultaneous full scan and MRM</li> </ul>
<i>Detector</i>	<ul style="list-style-type: none"> <li>• A high sensitivity, high throughput detector with zero dead time, low noise and high accuracy at low level detections.</li> <li>• An off-axis dynolite photomultiplier/Electron Multiplier detector.</li> <li>• The detector must operate in both positive and negative ion modes.</li> <li>• Capable of switching polarity rapidly.</li> </ul>
<i>Nitrogen Generator</i>	<ul style="list-style-type: none"> <li>• Should be supplied with the system along with the trouble-free inbuilt compressor and appropriate capacity reservoir which should be sufficient enough to deliver the gases required to run the system.</li> <li>• Should be complete with all necessary accessories</li> </ul>
<i>Workstation Software</i>	<ul style="list-style-type: none"> <li>• The software should be compatible with the existing Shimadzu Prominence HPLC system with PDA detector.</li> <li>• Software must be Multitasking type. It must acquire and process the data simultaneously.</li> <li>• 21 CFR Part 11 compliance should be offered.</li> <li>• Must be capable of performing the following functions and should be upgradable.</li> <li>• The workstation must control the MS, acquire, store, process and reproduce the data by the same computer.</li> <li>• The workstation must be able to control LC, Detector and autosampler.</li> </ul>

	<ul style="list-style-type: none"> <li>• It must be able to regulate the gas pressure and flow during the data acquisition and append to the relevant data file.</li> <li>• Software must have automated calibration and Quantitative optimization.</li> <li>• Automated MS to MS/MS switching during a single run with user-selectable criteria.</li> </ul> <p>Technology for the system optimization and status monitoring, performing the following parameters:</p> <ul style="list-style-type: none"> <li>• System parameters checks and alerts</li> <li>• Integrated sample/calibrant delivery system and programmable divert valve</li> <li>• Automated mass calibration</li> <li>• Automated Sample tuning</li> <li>• Automated SIR and MRM method Development.</li> <li>• MS and MS/MS in a single run</li> </ul>
Upgradation Accessories: Auto Sampler with Sample Cooler	Sample injection volume should be variable between 0.1 µl to 100 µl, Injection volume setting 0.1 ul. It must be capable of very fast injection time of <20sec/sample, with higher injection speed is preferred for high throughput analysis capability. The Carryover should be below 0.005 %, and Injection volume accuracy must be below 1% & injection precision: less than 0.2% RSD. The temperature setting range should be from 4 to 45°C. It should have safety features like a leak sensor.
Degassing Unit	The degassing unit should have four flow lines & membrane-type online degassing.
Column	1 No of C 18, 2.7 micron column to be provided.
Warranty	Three years from the date of installation.
AMC for MS	Two years post-warranty AMC to be offered Free of Charge for MS.

### **TERMS AND CONDITIONS FOR SUBMISSION OF BIDS**

The quotations should be submitted in two bids system; i.e., Technical bid, and Commercial bid. The technical bid must include all the details of the technical specifications of the instrument along with terms and conditions masking only the price component. Bill of materials, brochures, technical datasheets, and any other document may be enclosed to help the evaluation of the technical bid.

1. Quote should come only from Indian Original Equipment Manufacturer (OEM) or their Indian authorized distributor.
2. The quotation should be on FOR-IISc Bangalore basis in INR only.
3. Both the Technical and Commercial bid should be put in separate sealed envelopes, and put together in another cover stating “Quotation for Triple Quadrupole Mass Spectrometer” and should reach us on or before 10<sup>th</sup> September 2021.
4. Warranty should be for a period of 3 years from the date of installation. Annual maintenance contract for 2 years after warranty period may be quoted separately, as an optional item.

5. We prefer to make payment by Letter of Credit – 90% against presentation of documents and 10% after installation.
6. In addition to this, LC Amendments, Extension, Confirmation charges, if required, are to be borne by the beneficiary.
7. For supplies within India, the payment term is after supply and satisfactory installation.
8. If the goods are found to be defective, they have to be replaced/rectified at the cost of the suppliers within 15 days from the date of receipt of written communication from us.
9. If there is any delay in replacement/rectification, the warranty period should be correspondingly extended.
10. Excise Duty exemption certificate can be provided by the Institute.
11. Conditional tenders will not be accepted.
12. The purchaser reserves the right to accept or reject any bid, and to annul bidding process and reject all bids at any time prior to award of contract, without thereby incurring any liability to the affected bidder or bidders.

Any further queries can be made to [ksunagar@iisc.ac.in](mailto:ksunagar@iisc.ac.in) and copy mark to [office.ces@iisc.ac.in](mailto:office.ces@iisc.ac.in).

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(on behalf of purchase committee)