



## REQUEST FOR QUOTATION

No: RFQ-HKSTC 202605-01

For

### **LIQUID CHROMATOGRAPHY–INDUCTIVELY COUPLED PLASMA MASS SPECTROMETER (LC–ICP–MS) SYSTEM**

NAME OF COMPANY: The Hong Kong Standards and Testing Centre Limited (STC Hong Kong, “Buyer”)

ADDRESS: 10 Dai Wang Street, Tai Po Industrial Estate, Tai Po, NT, HK

TENDER DATE: 18<sup>th</sup> May 2026

Dear Sirs/ Madams,

Established in 1963, STC is an independent, not-for-profit testing, inspection and certification organization headquartered in Hong Kong, offering one-stop professional conformity assessment services for customers around the world to get access to the global markets.

As an organization with global network, not only has STC set up testing facilities and customer service offices in China’s major cities such as Dongguan, Shanghai, Changzhou, and Guangxi, but also in countries such as Vietnam, Japan, the USA and Germany. Our world-class, internationally accredited testing facilities and service meet the needs from a wide range of industries.

You are invited to submit a quotation for **LIQUID CHROMATOGRAPHY–INDUCTIVELY COUPLED PLASMA MASS SPECTROMETER (LC–ICP–MS) SYSTEM** according to the Technical Specifications.

When preparing your quotation, please be guided by the INSTRUCTION TO SUPPLIER attached hereto. Quotations shall be submitted in English and shall be marked with the note “**RFQ-HKSTC 202605-01 for LIQUID CHROMATOGRAPHY–INDUCTIVELY COUPLED PLASMA MASS SPECTROMETER (LC–ICP–MS) SYSTEM**)” on its cover.



Please submit your Quotation to the below email address on or before 5<sup>th</sup> June 2026:

*karenchung@stc.group*

This Request for Quotation does NOT constitute an offer and the Buyer is not obliged to accept the offer from any quotation received. The Buyer further reserves the right to enter into a contract with any supplier at its own discretion. The supplier shall bear all costs in relation to this Request for Quotation and has NO right to seek compensation from the Buyer.

Submission of your quotation shall constitute an acceptance to the above terms.

Thank you and we look forward to receiving your quotation.

Best regards,

The Hong Kong Standards and Testing Centre Limited

**INSTRUCTION TO SUPPLIER**

Customs clearance, if needed, shall be done by:	<input checked="" type="checkbox"/> Supplier
Address of Delivery Location	The Hong Kong Standards and Testing Centre Limited
Delivery Schedule	<input checked="" type="checkbox"/> Required
Preferred Currency of Quotation <sub>1</sub>	<input checked="" type="checkbox"/> United States Dollars, or <input checked="" type="checkbox"/> Hong Kong Dollars
After-sales services required	<input checked="" type="checkbox"/> Warranty on Parts and Labor for a minimum period of <u>2</u> years <input checked="" type="checkbox"/> Provision of Service Unit when pulled out for maintenance/repair <input checked="" type="checkbox"/> Installation and adjustment of the goods <input checked="" type="checkbox"/> Training on Operation, Maintenance and Application <input checked="" type="checkbox"/> Technical, Method development/ Method transfer Support <input checked="" type="checkbox"/> Maximum 24 hours for urgent repair actions

Deadline for the Submission of Quotation	<b>05<sup>th</sup> June 2026, 17:00 (Beijing time)</b>
All documentations, including catalogs, instructions and operating manuals, shall be in this language	<input checked="" type="checkbox"/> English
Documents to be submitted	<input checked="" type="checkbox"/> Company profile (short info up to 1 page); <input checked="" type="checkbox"/> Detailed technical description of the offered goods: brochures, technical data sheet and specifications; <input checked="" type="checkbox"/> Certificate of origin (C / O) and a quality certificate (C / Q); <input checked="" type="checkbox"/> Statement or certificate of origin for the offered equipment; <input checked="" type="checkbox"/> Name and address of authorized service in Hong Kong
Period of Validity of Quotes starting the Submission Deadline Date	<input checked="" type="checkbox"/> 12 months
Payment Term	<input checked="" type="checkbox"/> An advance payment is allowed up to a maximum of 30% of contract value.
Evaluation Criteria	<input checked="" type="checkbox"/> Technical responsiveness/ Full compliance to requirements, good reputation and lowest price;  <input checked="" type="checkbox"/> The Supplier must have sold at <b>least five (5) sets ICPMS system within HK commercial laboratory in five (5) years.</b> The supplier should provide list of installation with contact details and model details so that STC can approach contact person for any feedback;  <input checked="" type="checkbox"/> Availability of certificates of quality and origin for the offered equipment;  <input checked="" type="checkbox"/> Maximum delivery period and installation in buyer's office not to exceed <b>three (3) months</b> upon signature of contract;  <input checked="" type="checkbox"/> Availability of authorized service in Hong Kong and compliance with the after-sales services requirements.
The Buyer will award to:	<input checked="" type="checkbox"/> One and only one supplier
Type of Contract to be Signed	<input checked="" type="checkbox"/> Contract for Goods and/or Services



Conditions for Release of Payment	<input checked="" type="checkbox"/> Complete delivery and installation <input checked="" type="checkbox"/> Passing all testing and requirements <input checked="" type="checkbox"/> Completion of Training on Operation and Maintenance
Annexes to this RFQ	<input checked="" type="checkbox"/> Technical Specifications of the Goods Required (Annex)
Contact Person for Inquiries	Karen Chung Email: <a href="mailto:karenchung@stc.group">karenchung@stc.group</a> Contact number: +852-26661806



**ANNEX: TECHNICAL SPECIFICATIONS**

Name of equipment/ Description	
<b>LIQUID CHROMATOGRAPHY–INDUCTIVELY COUPLED PLASMA MASS SPECTROMETER (LC–ICP–MS) SYSTEM</b>	
<b>Model:</b>	
<b>Brand:</b>	
General description:	
<p>The vendor shall supply and install a Liquid Chromatography–Inductively Coupled Plasma Mass Spectrometer (LC–ICP–MS) System for trace analysis of heavy metals and ultra-trace elemental speciation analysis in foods, drugs and consumer products and related matrices.</p> <p>The configuration shall consist of fully integrated components comprising:</p> <ul style="list-style-type: none"> <li>• excitation source (ICP–MS RF generator with torch positioning and safety systems)</li> <li>• sample introduction system (LC-compatible interface including aqueous and organic solvent capability)</li> <li>• ion extraction and focusing system</li> <li>• collision/reaction cell</li> <li>• quadrupole mass spectrometer</li> <li>• vacuum system</li> <li>• dual-mode extended dynamic range detector</li> <li>• liquid chromatography components and interfaces</li> <li>• system control workstation and fully licensed software for instrument control and data handling</li> </ul> <p>The whole LC–ICP–MS system (including but not limited to LC, ICPMS, interference, autosamplers and cooling systems) shall include <b>24-months</b> warranty. Essential accessories such as ICP-MS autosampler, water cooling system, and required gas purification and gas line components shall also be provided.</p> <p>The instrument's vendor shall affirm in writing that spare parts for the entire instrument will be available for at least <b><u>ten years after the model of equipment supplied is phased out.</u></b> The Hong Kong agency should keep an adequate inventory of often necessary parts.</p>	
Technical specification and performance requirement	
1. Excitation Source	The system shall include a <b>fully automated RF generator</b> with operating output

(ICP-MS)	<p>power of <b>500 W to 1600 W</b>.</p> <p>Preferred RF generator: <b>solid-state digital drive, 27 MHz RF generator</b> with <b>variable frequency impedance matching</b> for maximum ionizing power.</p> <p>Torch position shall be <b>fully computer controlled and autotunable</b> in all three planes (<b>horizontal, vertical, and sampling depth</b>) by stepper motors or other mean, with <b>position resolution and reproducibility of 0.1 mm or better</b>.</p> <p>The torch shall be <b>grounded or shielded</b> to produce ions with <b>energy spread <math>\leq 1</math> eV</b>.</p> <p>The system shall include:</p> <ul style="list-style-type: none"> <li>• protective measures to shield harmful radiation from the RF generator</li> <li>• <b>safety interlock</b> to <b>automatically shut off</b> the RF generator in the event of loss of plasma gas supplies.</li> </ul>
2. Sample Introduction System (LC-ICP-MS Interface)	<p>Spray chamber shall be temperature controlled using a <b>Peltier-cooled type</b> device for aqueous sample introduction, with controlled temperature range of <b>-5 °C to +20 °C or wider</b>.</p> <p>Sample introduction system shall feature a <b>quartz torch</b> with an injector diameter of <b>2.5 mm or greater</b> for maximum tolerance of high matrix samples.</p> <p>Sample introduction system must include a <b>three-channel peristaltic pump</b> to ensure constant flow rate of sample solution to nebulizer.</p> <p>The system shall include <b>ultra-high matrix introduction</b> capability using <b>aerosol dilution technology</b> to allow analysis of samples with <b>total dissolved solids up to 25% without sample pretreatment</b>.</p> <p>An <b>extra gas line</b> with an independent <b>mass flow controller</b> shall be provided for addition of <b>O<sub>2</sub></b> for organic solvent analysis or organic mobile phase LC-ICP-MS operation.</p>

	<p>Organic solvent introduction kit and <b>one set of platinum interface cones</b> shall be provided for organic solvent analysis/organic mobile phase operation.</p> <p>Quartz torches with injector diameters of <b>1.5 mm</b> and <b>1.0 mm</b> shall be provided for:</p> <ul style="list-style-type: none"> <li>• very volatile solvents</li> <li>• high mobile phase flow rate applications in LC-ICP-MS</li> </ul>
<p>3. Ion Extraction and Focusing System</p>	<p>Ion extraction from the plasma shall be accomplished by a <b>two-cone type</b> interface: <b>Nickel-tipped</b> on <b>Copper base</b> or any config of cone and materials that can minimized both Cu and Ni leaching from the cone.</p> <p>Sampling cone orifice diameter shall be <math>\geq 1.0</math> mm and skimmer cone diameter shall be <math>\geq 0.45</math> mm.</p> <p>Ion lens assembly shall have capability to:</p> <ul style="list-style-type: none"> <li>• guide and focus ion beam extracted by skimmer cone</li> <li>• separate neutral species and photons from analyte ions</li> <li>• prevent neutral species and photons from reaching the detector</li> </ul> <p>Sampling cone, skimmer cone, and ion lens assembly shall be located <b>outside the high vacuum region</b> for <b>easy access and cleaning without breaking vacuum</b>.</p>
<p>4. Collision/Reaction Cell</p>	<p>Collision/reaction cell shall be positioned <b>between the ion lens assembly and the quadrupole mass spectrometer</b> as an integral part of the system.</p> <p>Collision/reaction cell shall be an <b>octopole ion guide</b> operated with <b>fixed RF amplitude</b> across full mass range to ensure high ion transmission and minimize ion scattering at high cell pressure.</p> <p>A mass flow control system or equivalent with <b>two different types of cell gases</b> shall be provided for pressurizing the collision/reaction cell (one gas type optional) within a single multi-element analysis method.</p> <p>Selection/optimization of collision/reaction cell gases shall be <b>fully computer</b></p>

	<p><b>controlled.</b></p> <p>Cell gas switching time shall be &lt; <b>5 seconds</b>.</p> <p>The collision/reaction cell system shall support:</p> <ul style="list-style-type: none"> <li>• <b>Normal Mode</b> (no pressurization with cell gas): must operate like a non-cell ICP–MS for multi-element analysis</li> <li>• <b>Collision Mode with kinetic energy discrimination:</b> must operate in collision mode using <b>helium gas only</b> under a single set of analyzing conditions</li> </ul> <p>The system should use <b>He cell gas only</b> for most elements to eliminate safety issues associated with reactive gases such as H<sub>2</sub>, H<sub>2</sub> mixes, or NH<sub>3</sub></p>
<p>5. Quadrupole Mass Spectrometer</p>	<p>Quadrupole shall be driven by high RF frequency of 3 MHz or above to produce a perfect hyperbolic field for optimum resolving power and ion transmission efficiency.</p> <p>Operation mass range shall span <b>2 to 260 amu</b> or higher, in steps of <b>1 amu</b> or smaller.</p> <p>Maximum quadrupole scan speed shall be <math>\geq</math> <b>3000 amu/sec</b> enabling transient time-resolved signal monitoring.</p> <p>Quadrupole rods shall have true hyperbolic cross-section for good peak shape and resolution.</p>
<p>6. Vacuum System</p>	<p>System shall maintain normal operating vacuum pressure of <b>10<sup>-5</sup> Torr or lower</b> during analysis.</p> <p>System should have an <b>auto recovery mode</b> to standby state in case of power failure.</p> <p>Vacuum system shall include:</p>

	<ul style="list-style-type: none"> <li>• at least one <b>direct-drive rotary pump</b> for interface</li> <li>• a <b>dual-stage turbomolecular pump</b> for intermediate and quadrupole stages</li> </ul>
<p>7. Dual Mode Extended Dynamic Range Detector</p>	<p>A <b>dual-stage discrete dynode type electron multiplier</b> shall be used as ion detector.</p> <p>Detector and readout electronics shall be capable of simultaneously recording <b>analog signals and pulse counting</b> during multi-element analysis.</p> <p>Detector shall have a minimum integration time of <b>100 μs</b>.</p> <p>Detector minimum dwell time shall be <b>0.1 ms</b> in both pulse count and analog mode for transient time-resolved signals from hyphenated ICP–MS for speciation analysis.</p> <p>Detector shall provide <b>true 11 orders of linear dynamic range or wider</b>.</p>
<p>8. Essential Accessories</p>	<p>An autosampler for ICP–MS must be included.</p> <p>Autosampler should have integrated enclosure and extraction air duct for maintaining maximum sample integrity by protecting samples from lab environment.</p> <p>Autosampler should accommodate up to <b>360 sample tubes</b> for high throughput unattended analysis.</p> <p>Provide a recirculating water chiller for cooling RF generator.</p> <p>Provide a complete set of <b>gas purification kit</b> for argon and helium gas lines.</p> <p>Provide a complete set of gas lines and necessary parts (tubings, fittings, connectors, etc.) required for connecting argon and collision/reaction cell gases to the ICP–MS.</p>

<p>9. Liquid Chromatography (LC)</p>	<p>System shall include a <b>bio-inert quaternary pump</b> with <b>metal-free flow paths</b>, capable of:</p> <ul style="list-style-type: none"> <li>• <b>600 bar up to 5 mL/min</b></li> <li>• <b>200 bar up to 10 mL/min</b></li> </ul> <p>Settable flow range: <b>0.001 to 10 mL/min</b>, increments <b>0.001 mL/min</b>.</p> <p>Flow precision: <b>≤ 0.07% RSD</b>.</p> <p>Flow accuracy: <b>± 1%.-</b></p> <p>Composition precision: <b>&lt; 0.2% RSD</b>.</p> <p>Delay volume: <b>≤ 600 µL</b>.</p> <p>Built-in degasser unit shall be included with <b>4 degassing channels</b>.</p> <p>Internal volume per degasser channel: <b>≥ 1.5 mL</b>.</p> <p>Bio-inert autosampler with metal-free flow paths, injection range <b>0.1–100 µL</b> in <b>0.1 µL increments</b>.</p> <p>Pressure operation range: <b>up to 600 bar or better</b>.</p> <p>Autosampler carryover: <b>&lt; 0.003%</b>.</p> <p>Autosampler shall accommodate at least <b>132 of 2 mL standard vials</b>, with options to accommodate <b>deep well plates</b>.</p> <p>Injection precision: <b>&lt; 0.15% RSD</b>.</p> <p>Injection cycle time: <b>≤ 10 seconds</b> for draw speed <b>100 µL/min</b>.</p> <p>Replicate injection per vial: <b>1–99 or more</b>.</p> <p>Connection kits and LC–ICP–MS interfaces shall be provided.</p>
<p>10. System Control Workstation &amp; Software Functions</p>	<p>Instrument control system shall comprise <b>one workstation</b> with appropriate operating software allowing full control of the system and data handling with minimum configurations:</p> <ul style="list-style-type: none"> <li>• CPU: Intel i5 or better</li> <li>• RAM: 8 GB DDR3 SDRAM or above</li> </ul>

- Hard Disk: 1 TB or above
- USB ports: at least four (4)
- Display: **24” LCD monitor or above** with color graphic interface card

Operating system shall be **fully multi-tasking**, such as **Microsoft Windows 11 or equivalent**, capable of direct access to commercial word processor and spreadsheet.

Provide a high-speed monochrome laser printer with:

- resolution not less than **1200 × 1200 dpi**
- output not less than **20 pages per minute**

All software and hardware shall be fully compatible and all software offered shall be **fully licensed**.

Backup software shall be provided. Any further version of the software and updates shall be provided free of cost for **at least 10 years**.

ICP–MS software shall provide the following functions:

- semi-quantitative analysis, quantitative analysis, isotopic ratio analysis, isotopic dilution analysis, external and standard addition calibration, with and without internal standards
- scanning modes: at least peak hopping, full mass scan, time-resolved, and single ion monitoring
- spectrometer control: all electronic spectrometer functions controlled by software and monitoring of instrumental vital parameters
- safety interlocks: fail-safe shutdown capability via built-in software and hardware interlocks
- automatic optimization: automatic optimization including xyz position of torch, mass resolution, nebulizer flow, RF power, lens voltage and detector calibration
- report generation with flexible data manipulation while maintaining data integrity
- QA/QC: display parameters including check sample, check standards and internal standard intensity

	<ul style="list-style-type: none"> <li>• real-time alert: alert messages/signals on system failure</li> <li>• maintenance log: logging runtime of vital parameters to facilitate maintenance and diagnostics.</li> </ul> <p>Software must interface with other chromatographic analytical instruments (*gas, liquid, and ion chromatography) and enable users to set up <b>fully automated sample sequences</b> for chromatography–ICP–MS runs with real-time data acquisition and analysis for ultra-trace elemental speciation.</p> <p><i>* It is preferable that the program can interface with our existing GC (Agilent, 8890 system) and IC system (Dionex, ICS-6000 system) for our future development.</i></p> <p>Software shall have advanced data acquisition capabilities for applications such as speciation, nano particle analysis, isotope ratio, isotope dilution analysis, laser ablation, etc.</p>
<p>Performance Requirements</p>	<p>Check-out standard solution, internal standard, and multi-element calibration standards shall be provided.</p> <p>System shall be capable of mass analysis of ions with <b>m/z between 2 and 260 amu</b>.</p> <p>Abundance sensitivity shall be:</p> <ul style="list-style-type: none"> <li>• <math>&lt; 5 \times 10^{-7}</math> on the lower-mass side</li> <li>• <math>&lt; 1 \times 10^{-7}</math> on the higher-mass side</li> </ul> <p>(for a selected element; provide test condition details)</p> <p>Background signal shall be <math>\leq 1</math> cps at <b>9 amu</b> under normal operating mode (provide defined test condition).</p> <p>Oxide ions ratio <math>\text{CeO}^+ / \text{Ce}^+</math> must be <math>\leq 0.5\%</math> under helium gas mode.</p> <p>Doubly charged ions ratio must be <math>\leq 3\%</math> under normal operating mode.</p> <p>Mass calibration stability shall be <math>\leq 3\%</math> RSD over at least 2 hours.</p> <p>Under normal mode, sensitivity shall be at least:</p>

	<ul style="list-style-type: none"> <li>• <b>7Li ≥ 55 Mcps/ppm</b></li> <li>• <b>89Y ≥ 320 Mcps/ppm</b></li> <li>• <b>205Tl ≥ 250 Mcps/ppm</b></li> </ul> <p>10.9 Under normal mode (no gas), detection limits shall be at least:</p> <ul style="list-style-type: none"> <li>• <b>9Be ≤ 0.2 ppt</b></li> <li>• <b>115In ≤ 0.05 ppt</b></li> <li>• <b>209Bi ≤ 0.08 ppt</b></li> </ul> <p>Isotope ratio precision: <b>107Ag / 109Ag ≤ 0.1% RSD</b> under normal operating mode.</p>
<p>Safety Features and Compliance</p>	<p>Electrical goods shall have short-circuit, overload, and earth leakage protection.</p> <p>Equipment shall comply with:</p> <ul style="list-style-type: none"> <li>• Electrical Products (Safety) Regulation</li> <li>• Code of Practice for Electricity (Wiring) Regulations 2015 Edition (EMSD).</li> </ul> <p>Equipment shall comply with <b>IEC 61010-1</b> or <b>EN 61010-1</b> (or equivalent). Variations shall be stated.</p> <p>Equipment shall comply with <b>IEC 61326</b> or <b>EN 61326</b> (or equivalent). Variations shall be stated.</p>
<p>Power Requirement</p>	<p>Equipment shall be directly/factory built for AC mains operation in Hong Kong with proper earthing arrangement.</p> <p>System shall operate within specification across voltage range <b>240 V ±10%, 50 Hz ±2%</b>, single-phase.</p> <p>All user accessible metal parts shall be efficiently bonded to earth through the power supply cable.</p>
<p>After sales service</p>	<p>The Warranty Period of the Goods shall be <b>twenty-four (24) months</b> from the Acceptance Date of the Goods.</p>

	<p>Should have a good after sales service/ technical support capable of reaching at short notice (&lt;<b>48 hours</b>) the places where LC-ICPMS is proposed to be installed.</p> <p>Under warranty period, visits and unlimited breakdown call by service/ application support, <b>engineer should attend immediately</b> without fail for LC-ICPMS system including autosampler and cooling system.</p>
Training of personnel	<p>Training for a period of not <b>less than one weeks</b> after installation of equipment to technical personnel should be provided, free of cost.</p> <p>Troubleshooting training can be provided if needed.</p> <p>Method development and method transfer support are <b>essential</b>.</p>