

RETURN BIDS TO:
RETOURNER LES SOUMISSIONS À:
**Bid Receiving - PWGSC / Réception des
soumissions - TPSGC**
11 Laurier St./ 11 rue, Laurier
Place du Portage, Phase III
Core 0A1 / Noyau 0A1
Gatineau, Québec K1A 0S5
Bid Fax: (819) 997-9776

REQUEST FOR PROPOSAL
DEMANDE DE PROPOSITION

**Proposal To: Public Works and Government
Services Canada**

We hereby offer to sell to Her Majesty the Queen in right of Canada, in accordance with the terms and conditions set out herein, referred to herein or attached hereto, the goods, services, and construction listed herein and on any attached sheets at the price(s) set out therefor.

**Proposition aux: Travaux Publics et Services
Gouvernementaux Canada**

Nous offrons par la présente de vendre à Sa Majesté la Reine du chef du Canada, aux conditions énoncées ou incluses par référence dans la présente et aux annexes ci-jointes, les biens, services et construction énumérés ici sur toute feuille ci-annexée, au(x) prix indiqué(s).

Comments - Commentaires

Title - Sujet Systeme de chromatographie LC-MS/MS	
Solicitation No. - N° de l'invitation 01756-140304/A	Date 2013-11-06
Client Reference No. - N° de référence du client 01756-140304	
GETS Reference No. - N° de référence de SEAG PW-\$\$PV-915-63828	
File No. - N° de dossier pv915.01756-140304	CCC No./N° CCC - FMS No./N° VME
Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2013-12-17	
Time Zone Fuseau horaire Eastern Standard Time EST	
F.O.B. - F.A.B. Plant-Usine: <input type="checkbox"/> Destination: <input checked="" type="checkbox"/> Other-Autre: <input type="checkbox"/>	
Address Enquiries to: - Adresser toutes questions à: Gosselin, Monique	Buyer Id - Id de l'acheteur pv915
Telephone No. - N° de téléphone (819) 956-3803 ()	FAX No. - N° de FAX () -
Destination - of Goods, Services, and Construction: Destination - des biens, services et construction: Agriculture et agro-alimentaire Canada Centre de Recherche et Développement 430 Boulevard Gouin St-Jean-sur-Richelieu, Québec J3B 3E6	

Instructions: See Herein

Instructions: Voir aux présentes

Vendor/Firm Name and Address
**Raison sociale et adresse du
fournisseur/de l'entrepreneur**

Issuing Office - Bureau de distribution
Scientific, Medical and Photographic Division / Division de
l'équipement scientifique, des produits photographiques et
pharmaceutiques
11 Laurier St./ 11 rue, Laurier
6B1, Place du Portage
Gatineau, Québec K1A 0S5

Delivery Required - Livraison exigée	Delivery Offered - Livraison proposée
Vendor/Firm Name and Address Raison sociale et adresse du fournisseur/de l'entrepreneur	
Telephone No. - N° de téléphone Facsimile No. - N° de télécopieur	
Name and title of person authorized to sign on behalf of Vendor/Firm (type or print) Nom et titre de la personne autorisée à signer au nom du fournisseur/ de l'entrepreneur (taper ou écrire en caractères d'imprimerie)	
Signature	Date



Item Article	Description	Dest. Code Dest.	Inv. Code Fact.	Qty Qté	U. of I. U. de D.	Unit Price/Prix unitaire FOB/FAM Destination	Plant/Usine	Delivery Req. Livraison Req.	Del. Offered Liv. offerte
1	LIQUID CHROMATOGRAPHY MAS	Total		1	Lot	\$	XXXXXXXXXXXX		

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PART 1 - GENERAL INFORMATION

1. Security Requirement

There is no security requirement associated with this bid solicitation..

2. Requirement

The requirement is detailed under the "Line Item Detail".

3. Debriefings

Bidders may request a debriefing on the results of the bid solicitation process. Bidders should make the request to the Contracting Authority within 15 working days of receipt of the results of the bid solicitation process. The debriefing may be in writing, by telephone or in person.

PART 2 - BIDDER INSTRUCTIONS

1. Standard Instructions, Clauses and Conditions

All instructions, clauses and conditions identified in the bid solicitation by number, date and title are set out in the *Standard Acquisition Clauses and Conditions Manual* (<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>) issued by Public Works and Government Services Canada.

Bidders who submit a bid agree to be bound by the instructions, clauses and conditions of the bid solicitation and accept the clauses and conditions of the resulting contract.

The 2003 (2013-06-01) Standard Instructions - Goods or Services - Competitive Requirements, are incorporated by reference into and form part of the bid solicitation.

Subsection 5.4 of 2003, Standard Instructions - Goods or Services - Competitive Requirements, is amended as follows:

Delete: sixty (60) days
Insert: ninety (90) days

1.1 SACC Manual Clauses

B1000T	Condition of Material	2007-11-30
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2. Submission of Bids

Bids must be submitted only to Public Works and Government Services Canada (PWGSC) Bid Receiving Unit by the date, time and place indicated on page 1 of the bid solicitation.

3. Enquiries - Bid Solicitation

All enquiries must be submitted in writing to the Contracting Authority no later than ten (10) calendar days before the bid closing date. Enquiries received after that time may not be answered.

Bidders should reference as accurately as possible the numbered item of the bid solicitation to which the enquiry relates. Care should be taken by bidders to explain each question in sufficient detail in order to enable Canada to provide an accurate answer. Technical enquiries that are of a proprietary nature must be clearly marked "proprietary" at each relevant item. Items identified as "proprietary" will be treated as such except where Canada determines that the enquiry is not of a proprietary nature. Canada may edit the questions or may request that the Bidder do so, so that the proprietary nature of the question is eliminated, and the enquiry can be answered with copies to all bidders. Enquiries not submitted in a form that can be distributed to all bidders may not be answered by Canada.

4. Applicable Laws

Any resulting contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in the province of Ontario, Canada.

Bidders may, at their discretion, substitute the applicable laws of a Canadian province or territory of their choice without affecting the validity of their bid, by deleting the name of the Canadian province or territory specified and inserting the name of the Canadian province or territory of their choice. If no change is made, it acknowledges that the applicable laws specified are acceptable to the bidders.

PART 3 - BID PREPARATION INSTRUCTIONS

1. Bid Preparation Instructions

Canada requests that bidders provide their bid in separately bound sections as follows:

Section I: Technical Bid (two (2) copies)
Section II: Financial Bid (one (1) copy)

Prices must appear in the financial bid only. No prices must be indicated in any other section of the bid.

Canada requests that bidders follow the format instructions described below in the preparation of their bid:

- (a) use 8.5 x 11 inch (216 mm x 279 mm) paper;
- (b) use a numbering system that corresponds to the bid solicitation.

1.1.5 Point of Manufacture/Shipping

The Bidder must state the point of manufacture/shipping of goods:

Location: _____

Postal Code: _____

1.1.6 Delivery

While delivery must be no later than 31st March 2014, the best delivery that could be offered by the Bidder is _____.

1.1.7 Software Upgrades

The Bidder must provide all software updates and new releases to the purchaser for a period of three (3) years following the acceptance, at no additional cost.

Note: The word "updates" means all enhancements, extensions or other modifications to the software. The word "releases" means enhancements or modifications to the software or new modules or supplementary modules that function in conjunction with the software, that represent the next generation of software, and which the Contractor has decided to make available to its customers usually for an additional charge.

1.1.8 Contacts

Bidders are requested to provide the following: Information pertaining to Article 5.3, Contractor Representatives under Part 6, Resulting Contract Clauses.

1.2 Section II: Financial Bid

The bidder must quote a firm lot price all inclusive of supply, installation, training and manuals, DDP (St-Jean-sur-Richelieu, Quebec), the total amount of applicable taxes must be shown separately. Freight charges to destination and all applicable Customs duties and Excise taxes must be included.

1.2.1 Exchange Rate Fluctuation

C3011T Exchange Rate Fluctuation

2010-01-11

1. Mandatory Certifications Required Precedent to Contract Award

1.1 Code of Conduct and Certifications - Related documentation

- 1.1.1 By submitting a bid, the Bidder certifies that the Bidder and its affiliates are in compliance with the provisions as stated in Section 01 Code of Conduct and Certifications - Bid of Standard Instructions 2003. The related documentation therein required will assist Canada in confirming that the certifications are true.

2. Additional Certifications Required with the Bid

Bidders must submit the following duly completed certifications with their bid.

2.1 Federal Contractors Program for Employment Equity - Bid Certification

By submitting a bid, the Bidder certifies that the Bidder, and any of the Bidder's members if the Bidder is a Joint Venture, is not named on the Federal Contractors Program (FCP) for employment equity "FCP Limited Eligibility to Bid" list (<http://www.hrsdc.gc.ca/eng/labour/index.shtml>) available from Human Resources and Skills Development Canada (HRSDC) - Labour's website.

Canada will have the right to declare a bid non-responsive if the Bidder, or any member of the Bidder if the Bidder is a Joint Venture, appears on the "FCP Limited Eligibility to Bid" list at the time of contract award.

PART 6 - RESULTING CONTRACT CLAUSES

1. Security Requirement

There is no security requirement applicable to this contract.

2. Requirement

2.1 Requirement

The Contractor must provide the items detailed under the Line Item Detail.

2.2 Installation

On-site installation must be provided and be carried out by a qualified service technician.

2.3 Manuals

The Contractor shall provide a complete and current set of end-user documentation with the system delivered. The Contractor must provide technical reference manuals from the Original Equipment Manufacturer (OEM) for each item delivered. The manuals may be unilingual, English or French. The user has the right to translate any of the unilingual technical manuals into the second of the two Official Languages and to make free use of that translation for Canada's purpose. This right must include the right to make, or to have made, copies for Canada's purposes only and to ultimately destroy those copies and the Contractor shall have no right to the translation.

Comply: **Yes** _____

No _____

2.4 Training

On-site user training on operator and basic maintenance for a minimum of 4 days must be provided for up to five (5) people and a minimum of 5 days advanced training for up to five (5) people. Advanced training must focus on the extent of the instrument analysis capabilities, the operating system software features and data analysis. Additional information on the instrument various components maintenance must be included.

2.5 Service

Purchase of the system must include: technical support; technical phone support; support via the Internet; and support via a fax-back document system. Service cost must be included in the price.

The Contractor must provide a toll-free phone number for service calls and technical assistance.

The Contractor must be able to respond and be on-site within 72 hours of a service call from Agriculture & Agri-Food Canada.

2.6 Software Upgrades

The contractor must provide all software updates and new releases to the purchaser for a period of three (3) years following the acceptance, at no additional cost.

3. Standard Clauses and Conditions

All clauses and conditions identified in the Contract by number, date and title are set out in the *Standard Acquisition Clauses and Conditions Manual* (<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>) issued by Public Works and Government Services Canada.

3.1 General Conditions

2010A (2013-04-25) General Conditions - Goods (Medium Complexity), apply to and form part of the Contract.

4. Term of Contract

4.1 Delivery Date

All the deliverables must be received on or before _____ (to be filled in only at contract award).

4.2 Electrical certification

The instrument must be Canadian Standards Association (CSA or CSA International) approved. Additionally, the equipment must meet the criteria of a National Certification body for the Country of Manufacture (i.e. EC, UL, ULC) before being shipped to the Horticultural Research and Development Centre, Saint-Jean-sur-Richelieu. CSA logo must be in the instrument.

Comply: Yes _____

No _____

Solicitation No. - N° de l'invitation
01756-140304/A

Amd. No. - N° de la modif.
01756-140304

Buyer ID - Id de l'acheteur
pv915

Client Ref. No. - N° de réf. du client
01756-140304

File No. - N° du dossier
pv91501756-140304

CCC No./N° CCC - FMS No/ N° VME

5. Authorities

5.1 Contracting Authority

The Contracting Authority for the Contract is:

Monique Gosselin
Public Works and Government Services Canada
Acquisitions Branch
Commercial Consumer Products Directorate
11 Laurier Street, 6A2, Phase III
Place du Portage, Gatineau, Quebec, K1A 0S5
Telephone: (819) 956-3803
Facsimile: (819) 956-3814
E-mail address: monique.gosselin@pwgsc.gc.ca

The Contracting Authority is responsible for the management of the Contract and any changes to the Contract must be authorized in writing by the Contracting Authority. The Contractor must

not perform work in excess of or outside the scope of the Contract based on verbal or written requests or instructions from anybody other than the Contracting Authority.

5.2 Technical Authority (to be filled in only at contract award)

The Technical Authority for the Contract is:

Name: _____
Telephone: (____) _____
E-mail address: _____

The Technical Authority named above is the representative of the department or agency for whom the Work is being carried out under the Contract and is responsible for all matters concerning the technical content of the Work under the Contract. Technical matters may be discussed with the Technical Authority, however the Technical Authority has no authority to authorize changes to the scope of the Work. Changes to the scope of the Work can only be made through a contract amendment issued by the Contracting Authority.

5.3 Contractor's Representative (fill in)

The telephone number of the person responsible for:

General enquiries
Name: _____
Telephone No. _____
Facsimile No. _____
E-mail address: _____

Delivery Follow-up
Name: _____
Telephone No. _____
Facsimile No. _____
E-mail address: _____

6. Payment

6.1 Basis of Payment - Firm Price

In consideration of the Contractor satisfactorily completing all of its obligations under the Contract, the Contractor will be paid a firm lot price, as specified in the contract for a cost of \$ _____ (to be filled in only at contract award). Customs duties are included and Applicable Taxes are extra.

Canada will not pay the Contractor for any design changes, modifications or interpretations of the Work, unless they have been approved, in writing, by the Contracting Authority before their incorporation into the Work.

6.2 SACC Manual Clauses

C2000C	Taxes - Foreign-Based Contractor	2007-11-30
H1000C	Single Payment	2008-05-12

7. Invoicing Instructions

1. The Contractor must submit invoices in accordance with the section entitled "Invoice Submission" of the general conditions. Invoices cannot be submitted until all work identified in the invoice is completed.
2. Invoices must be distributed as follows:
 - (a) The original and one (1) copy must be forwarded to the address shown on page 1 of the Contract for certification and payment.
 - (b) One (1) copy must be forwarded to the Contracting Authority identified under the section entitled "Authorities" of the Contract.

8. Certifications

8.1 Compliance

Compliance with the certifications and related documentation provided by the Contractor in its bid is a condition of the Contract and subject to verification by Canada during the term of the Contract. If the Contractor does not comply with any certification, provide the related documentation or if it is determined that any certification made by the Contractor in its bid is untrue, whether made knowingly or unknowingly, Canada has the right, pursuant to the default provision of the Contract, to terminate the Contract for default.

9. Applicable Laws

The Contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in the province of Ontario, Canada.

10. Priority of Documents

If there is a discrepancy between the wordings of any documents that appear on the list, the wording of the document that first appears on the list has priority over the wording of any document that subsequently appears on the list.

- (a) the Articles of Agreement;
- (b) 2010A (2013-04-25) General Conditions - Goods (Medium Complexity);
- (c) Annex A, Mandatory Specifications for a Liquid Chromatography -Mass Spectrometry (LC-MS);
- (d) the Contractor's bid dated (to be filled in at contract award).

11. SACC Manual clause

B1501C	Electrical Equipment	2006-06-16
A9068C	Government Site Regulations	2010-01-11
A2000C	Foreign Nationals (Canadian Contractor)	2006-06-16
A2001C	Foreign Nationals (Foreign Contractor)	2006-06-16

12. Shipping Instructions - Delivery at Destination

1. Goods must be consigned to the destination specified in the Contract and delivered:

Delivered Duty Paid (DDP) (St-Jean-sur Richelieu, Quebec) Incoterms 2000 for shipments from a commercial contractor.
2. The Contractor will be responsible for all delivery charges, administration, costs and risk of transport and customs clearance, including the payment of customs duties and taxes.

ANNEX A

MANDATORY SPECIFICATIONS FOR A LIQUID CHROMATOGRAPHY -MASS SPECTROMETERY (LC-MS)

Agriculture & Agri-Food Canada at the Horticultural Research and Development Centre, Saint-Jean-sur-Richelieu want to purchase a Liquid-Chromatography-Mass Spectrometry (LC-MS) system. This equipment is required to address the needs of approved research projects. The equipment will be operated by trained technicians under the supervision of a research scientist and of the service lab chemist. Although the system will be available for all the center scientists it will be mainly used by 3 teams (postharvest physiology, bacteriology and nematology) for:

- 1) the analysis of plant extract to characterize/identify secondary metabolites (phenolic compounds, peptides, proteins) expressed in response to stressing agents. These metabolites being involved in plant defense and are also purported to have beneficial impacts on human health;
- 2) the study of plants-pathogens-environment interactions to establish the elicited secondary metabolites profile (mainly phenolic compounds) in plants under various stresses and cultural practices;
- 3) fractionation/isolation/identification of macromolecules (carbohydrates) in root exudates impacting on plant parasitic nematodes.

Vendors must cross reference the mandatory technical criteria in a concise format by using page, paragraph(s) & sub-paragraphs as applicable to their supporting technical documentation.

1.0 AUTOSAMPLER

1.1 The autosampler must be designed for u-HPLC and able to operate at least at 12 000 psi;

Reference in Contractors Proposal: _____

1.2 The contribution to dwell volume must be less than 20µl (default configuration);

Reference in Contractors Proposal: _____

1.3 The autosampler must be fully programmable to handle overnight sample batches;

Reference in Contractors Proposal: _____

1.4 The autosampler must include sample preparation functions and auto dilution;

Reference in Contractors Proposal: _____

1.5 The autosampler must be able to accomodate at least 96 standards 2-ml vials or 2 microplates (96 or other wellplates);

Reference in Contractors Proposal: _____

1.6 The autosampler temperature must be settable from 4 °C to 40 °C in 1°C increment;

Reference in Contractors Proposal: _____

1.7 The autosampler configuration must allow to work with or without light conditions (light access control and must be accessible without the use of tools);

Reference in Contractors Proposal: _____

1.8 The autosampler injection volume must be in the range of 0.1 to 100µl;

Reference in Contractors Proposal: _____

1.9 The autosampler must be able to perform replicate injections from 1 to 99 and to have random access to any vial for multi-method operation;

Reference in Contractors Proposal: _____

1.10 The autosampler carryover must be 0.004% or less;

Reference in Contractors Proposal: _____

1.11 The autosampler must be equipped with a degassed needlewash and the injection mode must be flow-through needle (FTN);

Reference in Contractors Proposal: _____

1.12 The autosampler precision must equal or exceed 0.5% RSD from 0.2 to 1.9 µl and equal or exceed 1.0% RDS from 2 to 10 µl range;

Reference in Contractors Proposal: _____

1.13 The autosampler accuraccy (aspiration) must be of 10 µl±0.2µl and linearity greater than 0.9999;

Reference in Contractors Proposal: _____

1.14 The autosampler must be able to load the injector loop before completion of the last injection and must be able to take the injector loop out of the system flow path automatically;

Reference in Contractors Proposal: _____

1.15 The autosampler must be able to take a sample with only 5 ul of sample into a 2 ml vial..

Reference in Contractors Proposal: _____

2.0 POMPE

2.1 The pump must be a quaternary pump;

Référence dans la proposition de l'entrepreneur : _____

2.2 The pump must be able to blend 4 solvents simultaneously in user defined proportion and concentration;

Reference in Contractors Proposal: _____

2.3 The pump operating pressure must be at least 12,000 psi,;

Reference in Contractors Proposal: _____

2.4 The user must be able to select upper and lower pressure limits within settable range of flow rate;

Reference in Contractors Proposal: _____

2.5 The pump must have an integrated degasser operating at the maximum flow rate with an independent channel for each solvent;

Reference in Contractors Proposal: _____

2.6 The degasser must support up to two additional channels for the autosampler;

Reference in Contractors Proposal: _____

2.7 The pump must automatically synchronize injection start between the pump and the autosampler for enhance retention time and reproductibility;

Reference in Contractors Proposal: _____

2.8 The pump must have an automatic and continuous compressibility compensation without user intervention;

Reference in Contractors Proposal: _____

- 2.9** The intake valve, plungers, gradient proportioning valve and seals must be replaceable individually and accessible to user for on site maintenance without a service engineer

Reference in Contractors Proposal: _____

- 2.10** The pump must have an integrated and automated intake valve;

Reference in Contractors Proposal: _____

- 2.11** The pump must be equipped with an automatic and programmable "wash plungers" to prevent build-up on the pump plungers. The function "wash plungers" must be able to be run automatically or manually;

Reference in Contractors Proposal: _____

- 2.12** The pump flow must be settable from 10 to 2,000 $\mu\text{L}/\text{minute}$ in increment of $1\mu\text{L}/\text{minute}$;

Reference in Contractors Proposal: _____

- 2.13** The solvent composition must be settable from 0.0 to 100% in 0.1% increments with compositional accuracy of $\pm 0.5\%$ from 5 to 90%, from 0.500 to 2.000 mL/min;

Reference in Contractors Proposal: _____

- 2.14** The compositional ripple (baseline noise) must be $\leq 1.0\text{mAU}$ with $100\mu\text{l}$ mixer;

Reference in Contractors Proposal: _____

- 2.15** The pump must support an automatic prime feature for automatic priming of solvent lines of the optional solvent selection valve when a new line is selected;

Reference in Contractors Proposal: _____

- 2.16** The pump must include solvent tray with space to support 1 liter solvent bottles and caps.

Reference in Contractors Proposal: _____

3.0 COLUMN HEATER

- 3.1** The column heater must be designed for u-HPLC;

Reference in Contractors Proposal: _____

- 3.2** The column heater must be able to heat column from $20\text{ }^\circ\text{C}$ to $90\text{ }^\circ\text{C}$;

Reference in Contractors Proposal: _____

3.3 The column heater compartment must support at least one column from 1.0mm to 4.6mm ID and up to 150 mm length with a guard or pre-filter column;

Reference in Contractors Proposal: _____

3.4 All stored information from the column heater must be accessible through the system control;

Reference in Contractors Proposal: _____

3.5 The column heater contribution to delay volume must be $\leq 2\mu\text{l}$ with active preheating;

Reference in Contractors Proposal: _____

3.6 The column heater must allow optional column switching with integral column bypass and waste channels without plumbing changes;

Reference in Contractors Proposal: _____

3.7 When switching column, the system must decompress to improve column lifetime.

Reference in Contractors Proposal: _____

4.0 DIODE ARRAY DETECTOR

4.1 The diode array detector must be designed for u-HPLC;

Reference in Contractors Proposal: _____

4.2 The diode array detector doit avoir une gamme de 190 à 500 nm avec une lampe au deutérium préaligné, avec dérive $\leq 1.0 \times 10^{-3}$ AU/hour /C;

Reference in Contractors Proposal: _____

4.3 The diode array detector must have a wavelength accuracy of $\pm 1\text{nm}$. Response must be linear ($\leq 5\%$ at 2.0 AU) across 2 AU dynamic range;

Reference in Contractors Proposal: _____

4.4 The diode array detector optical resolution must be 1.2 nm;

Reference in Contractors Proposal: _____

4.5 The diode array detector must have a flow cell with a path length of 10 mm and a volume of $\geq 500\text{nL}$.

Reference in Contractors Proposal: _____

5.0 ION SOURCE

5.1 The mass spectrometer must be equipped with an atmospheric pressure ionisation (API) interface that includes the source and spraying elements. Samples must be introduced by direct infusion, or the system must be interfaced directly to an u-HPLC;

Reference in Contractors Proposal: _____

5.2 The ion source must be orthogonal design;

Reference in Contractors Proposal: _____

5.3 The sprayer must be positioned for maximum source longevity and analyser protection against "dirty" samples;

Reference in Contractors Proposal: _____

5.4 The introduction of sample or calibrant solution must be possible, either directly or combined with the LC eluent, automatically via an integrated fluidics assembly;

Reference in Contractors Proposal: _____

5.5 Tool free access to the ion source must be incorporated to allow cleaning without removal of the ion source enclosure and must be conspicuous;

Reference in Contractors Proposal: _____

5.6 The removal and replacement of the ion source enclosure must be tool free;

Reference in Contractors Proposal: _____

5.7 The configuration must be such that the source elements can be removed and cleaned without breaking instrument vacuum, maximising instrument uptime;

Reference in Contractors Proposal: _____

5.8 Positive and negative ionisation capabilities must be included as standard on the instrument.;

Reference in Contractors Proposal: _____

5.9 The ion source must be able to use standard laboratory grade Nitrogen for the desolvation and cone gas;

Reference in Contractors Proposal: _____

5.10 The desolvation and cone gas must be supplied via digitally controlled mass flow meters and be controlled via the data system;

Reference in Contractors Proposal: _____

5.11 All source voltages must be under data system control and must incorporate active readbacks;

Reference in Contractors Proposal: _____

5.12 The ion source must include the facility to de-cluster ions formed at atmospheric pressure.

Reference in Contractors Proposal: _____

6.0 IONISATION SOURCES

6.1 An electrospray ionisation (ESI) source must be provided and the ESI must warrant efficient desolvation;

Reference in Contractors Proposal: _____

6.2 No supplementary heater or probe must be required to work over the 5-2000 $\mu\text{L}/\text{min}$ flow range;

Reference in Contractors Proposal: _____

6.3 The probe must incorporate a facility to adjust the sprayer tip length in-situ to allow optimisation of ionisation;

Reference in Contractors Proposal: _____

6.4 Electrospray ionisation and atmospheric pressure chemical ionisation must be provided. ESI and APCI ionisation must be achievable using a single probe.

Reference in Contractors Proposal: _____

6.5 Ionisation voltages of at least 5kV must be achievable;

Reference in Contractors Proposal: _____

6.6 Standard APCI (atmospheric pressure chemical ionisation) must be available and must support LC flow rates of up to 2000 $\mu\text{L}/\text{min}$;

Reference in Contractors Proposal: _____

6.7 Ionisation sources must be under data system control and allow for flexible timing of the proportion of reference to standard sprayer input to the system;

Reference in Contractors Proposal: _____

6.8 The data system must also store and handle the reference sprayer data channel separately from the analyte data.

Reference in Contractors Proposal: _____

7.0 QUADRUPOLE ANALYZER

7.1 The quadrupole mass filter must allow for efficient transmission of ions in the rf only MS mode and selection of precursor ions for MS/MS analysis;

Reference in Contractors Proposal: _____

7.2 The unit mass resolution for precursor ion selection must be possible.

Reference in Contractors Proposal: _____

7.3 The mass spectrometer must be supplied with a 4kDa quadrupole mass analyser. Range must be 20 to 4000 m/z (resolving mode) or 20 to 16,000 m/z (non resolving mode).

Reference in Contractors Proposal: _____

8.0 COLLISION CELL

8.1 The collision cell must allow fragmentation and ion transfer without interference;

Reference in Contractors Proposal: _____

9.0 TOF (Time-Of-Flight : détecteur à temps de vol)

9.1 The TOF must have a superfast (nanosecond) electron multiplier TOF detector;

Reference in Contractors Proposal: _____

9.2 Ion arrival times must be recorded using an analog-to-digital converter with an acquisition rate of 6 GHz to provide excellent peak definition and mass accuracy;

Reference in Contractors Proposal: _____

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- 9.3** The user must be able to easily select via the data system a spectral resolution of either $\geq 10,000$ FWHM (sensitivity mode) or $\geq 20,000$ FWHM (resolution mode)

Reference in Contractors Proposal: _____

- 9.4** The TOF must be able to acquire full spectral data at rates of at least 30 spectra/s;

Reference in Contractors Proposal: _____

- 9.5** The TOF must have one ion injection cell with two stage orthogonal acceleration system and a high precision two stage reflectron.

Reference in Contractors Proposal: _____

10.0 ELECTRICAL

- 10.1** The power requirements must not exceed 240 V, 20A per circuit for the MS, the computer system and the u-HPLC.

Reference in Contractors Proposal: _____

11.0 INSTRUMENT CONTROL AND DATA PROCESSING

- 11.1** The MS software must incorporate software that aids the user to set up the operation of the instrument;

Reference in Contractors Proposal: _____

- 11.2** The software must facilitate automated LC/MS system check experiments;

Reference in Contractors Proposal: _____

- 11.3** Functionality must include auto-calibration and set up of the reference mass for exact mass measurement over the widest available dynamic range;

Reference in Contractors Proposal: _____

- 11.4** The wizard functionality must provide dialog to keep the user updated on progress throughout the procedure;

Reference in Contractors Proposal: _____

- 11.5** A computer must be provided to operate the system;

Reference in Contractors Proposal: _____

11.6 The display data is to be fully synchronized, in real time, in a window on the monitor which provides information on the ion beam and instrument;

Reference in Contractors Proposal: _____

11.7 The following type of spectral data must be acquired on the instrument: Continuum (profile) data, Centroid (stick) data;

Reference in Contractors Proposal: _____

11.8 The mass spectrometer must have the ability to switch polarity between experiments and select appropriate calibration, on a sample list;

Reference in Contractors Proposal: _____

11.9 The MS software must monitor parameters including temperature, voltage and gas flow readbacks, calibration validity and available hard disk space;

Reference in Contractors Proposal: _____

11.10 The MS software must provide a continuously updated indication that the system is functioning correctly;

Reference in Contractors Proposal: _____

11.11 The MS software must provide for the automatic testing of the LC/MS system using a sequence of preconfigured LC/MS acquisitions. Results should be displayed in an automatically generated report;

Reference in Contractors Proposal: _____

11.12 In order to maximise system uptime, the MS software should allow the collection of diagnostic readbacks from the system electronics to be obtained remotely by a trained engineer, without physical interaction with the instrument;

Reference in Contractors Proposal: _____

11.13 In centroid data acquisition, a two point lock mass must be specified to provide an exact mass measurement in real-time;

Reference in Contractors Proposal: _____

11.14 The scan frequency at which the reference sprayer is sampled must be user specified;

Reference in Contractors Proposal: _____

11.15 The software must be included with the system;

Reference in Contractors Proposal: _____

11.16 The software must be compatible with MS Windows 7, 64 bit operating system;

Reference in Contractors Proposal: _____

11.17 The software must be able to control all functions of both instruments (uHPLC and MS);

Reference in Contractors Proposal: _____

11.18 The software must be able to acquire, analyse, manage and share MS informations;

Reference in Contractors Proposal: _____

11.19 The data processing software must incorporate an elemental composition calculator as standard;

Reference in Contractors Proposal: _____

11.20 The algorithms must be included into the calculator for isotope pattern modelling that allow data interpretation of actual isotope patterns;

Reference in Contractors Proposal: _____

11.21 A goodness of fit from actual to theoretical isotopes must be included;

Reference in Contractors Proposal: _____

11.22 The ability to filter out incorrect elemental composition calculations through the use of intelligent spectral interpretation algorithms must be incorporated;

Reference in Contractors Proposal: _____

11.23 The software should be capable of MS^E data acquisitions whereby high and low collision energy data is acquired simultaneously to provide fragmentation data for all detectable molecular ions;

Reference in Contractors Proposal: _____

11.24 The instrument must alternate between low and high-energy in the collision cell at user-defined intervals. In the low-energy acquisition it records the mass spectrum exhibiting mainly precursor ions, and in the high-energy acquisition their respective fragment ions;

Reference in Contractors Proposal: _____

11.25 The software should provide a quantitation package as standard which provides quantification of LCMS data;

Reference in Contractors Proposal: _____

11.26 The software must quickly process groups of samples (secondary metabolites, proteines, peptides and else);

Reference in Contractors Proposal: _____

11.27 The software must allow automated peak detection, calibration and quantification;

Reference in Contractors Proposal: _____

11.28 The system must be equipped with leak sensing diagnostic data displayed software. Drips must be collected and directed to a suitable waste container;

Reference in Contractors Proposal: _____

11.29 The control and data acquisition must be provided within the MS acquisition software for a variety of single channel, multi-channel and diode array UV detectors.

Reference in Contractors Proposal: _____

12.0 OTHER SPECIFICATIONS

12.1 All flow path must be able to tolerate solvent pH from 2-12;

Reference in Contractors Proposal: _____

12.2 Total audible noise for the system must be ≤ 65 dBA;

Reference in Contractors Proposal: _____

12.3 The system configuration must warrant reduction of the impact of the pump dwell volume on the system throughput. This must be achieved by having the pump and the autosampler management system automatically communicate with each other to coordinate their pre-injection operations;

Reference in Contractors Proposal: _____

12.4 Prior to the actual injection operation, the autosampler must perform washing and sample aspiration while the pump must deliver the gradient to the injector valve;

Reference in Contractors Proposal: _____

12.5 The mass spectrometer must be an hybrid quadrupole time-of-flight for analyzing plant metabolites;

Reference in Contractors Proposal: _____

12.6 The mass spectrometer must be equipped with a high performance quadrupole analyzer, a collision cell under programmable software control and a high performance TOF analyzer with a mass range up to m/z 100,000 and a resolving power of 32,500 FWHM;

Reference in Contractors Proposal: _____

12.7 The linear dynamic range of the instrument must be up to 5 orders of magnitude for relative quantification;

Reference in Contractors Proposal: _____

12.8 The mass spectrometer must incorporate a differentially pumped and automated vacuum system;

Reference in Contractors Proposal: _____

12.9 The mass spectrometer must have three independante air-cooled turbomolecular pumps (one for the source, one for the quadrupole and one for the TOF);

Reference in Contractors Proposal: _____

12.10 The mass spectrometer must be equipped with analyser vacuum gauge;

Reference in Contractors Proposal: _____

12.11 The vacuum read backs and system vent/pumps cycles must be digitally monitored to provide software control and ensure fail-safe operation in the event of power failure;

Reference in Contractors Proposal: _____

12.12 The instrument must be bench top in design no more than 1m x 0,7 m x 1 m (H x W x D) and weight \leq 200 Kg;

Reference in Contractors Proposal: _____

12.13 An automated, integral fluidics must be present that facilitates seamless instrument calibration, lock mass introduction and sample introduction into the source;

Reference in Contractors Proposal: _____

12.14 The u-HPLC system must be provided within the MS acquisition software;

Reference in Contractors Proposal: _____

12.15 The MS acquisition software must incorporate an inlet configuration wizard that allows the user to configure the specified LC pumps;

Reference in Contractors Proposal: _____

12.16 Analogue inputs must be available for interfacing to ancillary LC detectors (PDA, ELSD, etc);

Reference in Contractors Proposal: _____

12.17 The total system dwell volume with default system setting must be $\leq 400\mu\text{l}$;

Reference in Contractors Proposal: _____

12.18 A waste solvent drainage system must be integrated into the main chassis of the instrument for safe drainage of LC solvent from the source in the event of a nitrogen supply failure to the instrument. A connection must be available to draining solvent to suitable reservoir.

Reference in Contractors Proposal: _____