



The following documentation is an electronically-submitted vendor response to an advertised solicitation from the *West Virginia Purchasing Bulletin* within the Vendor Self-Service portal at ***wvOASIS.gov***. As part of the State of West Virginia's procurement process, and to maintain the transparency of the bid-opening process, this documentation submitted online is publicly posted by the West Virginia Purchasing Division at ***WVPurchasing.gov*** with any other vendor responses to this solicitation submitted to the Purchasing Division in hard copy format.

Header 2

List View

General Information [Contact](#) [Default Values](#) [Discount](#) [Document Information](#) [Clarification Request](#)

Procurement Folder: 1979110

Procurement Type: Central Purchase Order

Vendor ID: 000000193063

Legal Name: SHIMADZU SCIENTIFIC INSTRUMENTS INC

Alias/DBA:

Total Bid: \$433,066.55

Response Date: 06/24/2026

Response Time: 13:03

Responded By User ID: SHIMADZUSOE

First Name: Rex

Last Name: Jackson

Email: rmjackson@shimadzu.com

Phone: 8594690126

SO Doc Code: CRFQ

SO Dept: 1400

SO Doc ID: AGR2600000044

Published Date: 6/15/26

Close Date: 6/24/26

Close Time: 13:30

Status: Closed

Solicitation Description: GCSM and GC-MS/MS Systems

Total of Header Attachments: 2

Total of All Attachments: 2



Department of Administration
Purchasing Division
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130

State of West Virginia
Solicitation Response

Proc Folder: 1979110
Solicitation Description: GCSM and GC-MS/MS Systems
Proc Type: Central Purchase Order

Solicitation Closes	Solicitation Response	Version
2026-06-24 13:30	SR 1400 ESR06242600000009045	1

VENDOR
000000193063
SHIMADZU SCIENTIFIC INSTRUMENTS INC

Solicitation Number: CRFQ 1400 AGR2600000044
Total Bid: 433066.54999999999883584678173 **Response Date:** 2026-06-24 **Response Time:** 13:03:48
Comments:

FOR INFORMATION CONTACT THE BUYER
Larry D McDonnell
304-558-2063
larry.d.mcdonnell@wv.gov

Vendor		
Signature X	FEIN#	DATE

All offers subject to all terms and conditions contained in this solicitation

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
1	GCMS and GC-MS/MS Systems	1.00000	EA	433066.550000	433066.55

Comm Code	Manufacturer	Specification	Model #
41115703			

Commodity Line Comments: Delivery may be as long as 90 days depending on parts availability

Extended Description:

See attached documentation for further details.

June 24, 2026

Department of Administration

Purchasing Division

2019 Washington Street East

PO Box 50130

Charleston, WV 25305-0130

To Larry McDonnell:

The attached bid documents are the Shimadzu Scientific Instruments response to Solicitation CRFQ 1400 AGR2600000044.

In addition, I would like to take a few minutes to explain in greater detail some of the important points of what we are offering to the Department of Agriculture.

First, the GCMS-8040NX was the model referenced in the article Simultaneous Screening of 322 Residual Pesticides in Fruits and Vegetables Using GC-MS/MS and Deterministic Health Risk Assessments. This will allow for simple method optimization for one of the GC-MS/MS methods. The methods for your GCMS SQ with FID will easily be able to have its methods transferred to LabSolutions software. We have method transfer tools and can directly optimize the conditions listed for the other referenced methods.

LabSolutions GCMS is the same software platform for both the single and triple quadrupole mass spectrometers. This is a key advantage over some of the other vendors due to ease of training. LabSolutions is also the platform used for Shimadzu's vast lineup of analytical instrumentation. This will prepare the end users for a lower learning curve, especially with new hires. Speaking of training, Shimadzu will be including an uncapped time for training in your first year. We can plan for 3 days initially, work around separate shifts, and follow-up at no extra cost. You will also have free technical support for the lifetime of ownership via remote desktop sessions, emails, or over the phone. We never charge for that level of technical support,

regardless of contract status for service. Service options are listed on the quote and include pricing for both instruments.

Shimadzu GCMS are assembled in Canby, Oregon using locally sourced parts. All parts can be easily ordered via our webstore at <https://store.shimadzu.com/>. I will be your direct sales contact for quotes for anything not located on the webstore, and I look forward to being a trusted advisor in the laboratory. The work that the Department of Agriculture does to ensure safety for the citizens of West Virginia is incredibly important, and we will support you as any needs arise.

Both GCMS models offered include Electron Impact Ionization (EI), Negative Chemical Ionization (NCI), and Positive Chemical Ionization. All specifications requested are satisfied via the proposed bid below. Please contact me directly with any questions or comments.

Rex Jackson

Sales Engineer – KY/WV

859-469-0126

rmjackson@shimadzu.com



Department of Administration
Purchasing Division
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130

State of West Virginia
Centralized Request for Quote
Laboratory

Proc Folder: 1979110			Reason for Modification:
Doc Description: GCSM and GC-MS/MS Systems			
Proc Type: Central Purchase Order			
Date Issued	Solicitation Closes	Solicitation No	Version
2026-06-09	2026-06-24 13:30	CRFQ 1400 AGR2600000044	1

BID RECEIVING LOCATION

BID CLERK
DEPARTMENT OF ADMINISTRATION
PURCHASING DIVISION
2019 WASHINGTON ST E
CHARLESTON WV 25305
US

VENDOR

Vendor Customer Code: 000000193063

Vendor Name : Shimadzu Scientific Instruments

Address :

Street : 7102 Riverwood Dr

City : Columbia

State : MD **Country :** USA **Zip :** 21046

Principal Contact : Faith Hays, Ph.D. Regional Manager Southeast

Vendor Contact Phone: 919-425-2534 **Extension:**

FOR INFORMATION CONTACT THE BUYER

Larry D McDonnell
304-558-2063
larry.d.mcdonnell@wv.gov

Vendor
Signature X *Faith Hays*

FEIN# 52-1035956

DATE 06/23/2026

All offers subject to all terms and conditions contained in this solicitation

ADDITIONAL INFORMATION
Addendum No. 01 To attach answers to vendor questions.
Bid opening date and time still remains 06/24/2026 at 1:30PM EST/EDT.
No other changes

INVOICE TO	SHIP TO
AGRICULTURE DEPARTMENT OF ADMINISTRATIVE SERVICES 1900 KANAWHA BLVD E CHARLESTON WV US	AGRICULTURE DEPARTMENT OF REGULATORY PROTECTION DIVISION 313 GUS R DOUGLAS LN, BLDG 11 CHARLESTON WV US

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
1	GCMS and GC-MS/MS Systems GCMS-2020NXNC and GCMS-8040NXNC	1.00000	EA	\$433,066.55	\$433,066.55

Comm Code	Manufacturer	Specification	Model #
41115703	Shimadzu Scientific Instruments, Inc		GCMS-2020NXNC and GCMS-8040NXNC

Extended Description:
See attached documentation for further details.

SCHEDULE OF EVENTS		
<u>Line</u>	<u>Event</u>	<u>Event Date</u>

INSTRUCTIONS TO VENDORS SUBMITTING BIDS

1. **REVIEW DOCUMENTS THOROUGHLY:** The attached documents contain a solicitation for bids. Please read these instructions and all documents attached in their entirety. These instructions provide critical information about requirements that if overlooked could lead to disqualification of a Vendor's bid. All bids must be submitted in accordance with the provisions contained in these instructions and the Solicitation. Failure to do so may result in disqualification of Vendor's bid.

2. **MANDATORY TERMS:** The Solicitation may contain **mandatory** provisions identified by the use of the words "**must**," "**will**," and "**shall**." Failure to comply with a mandatory term in the Solicitation will result in bid disqualification.

3. **PRE-BID MEETING:** The item identified below shall apply to this Solicitation.

☒ A pre-bid meeting will not be held prior to bid opening

☐ A **MANDATORY PRE-BID** meeting will be held at the following place and time:

All Vendors submitting a bid must attend the **mandatory** pre-bid meeting. Failure to attend the **mandatory** pre-bid meeting shall result in disqualification of the Vendor's bid. No one individual is permitted to represent more than one vendor at the pre-bid meeting. Any individual that does attempt to represent two or more vendors will be required to select one vendor to which the individual's attendance will be attributed. The vendors not selected will be deemed to have not attended the pre-bid meeting unless another individual attended on their behalf.

An attendance sheet provided at the pre-bid meeting shall serve as the official document verifying attendance. Any person attending the pre-bid meeting on behalf of a Vendor must list on the attendance sheet his or her name and the name of the Vendor he or she is representing. It is the Vendor's responsibility to locate the attendance sheet and provide the required information. Failure to complete the attendance sheet as required may result in disqualification of Vendor's bid.

Vendors who arrive after the starting time but prior to the end of the pre-bid will be permitted to sign in but are charged with knowing all matters discussed at the pre-bid.

Any discussions or answers to questions at the pre-bid meeting are preliminary in nature and are non-binding. Official and binding answers to questions will be published in a written addendum to the Solicitation prior to bid opening.

4. VENDOR QUESTION DEADLINE: Vendors may submit questions relating to this Solicitation to the Purchasing Division. Questions must be submitted in writing. All questions **must be submitted on or before the date listed below and to the address listed below to be considered.** A written response will be published in a Solicitation addendum if a response is possible and appropriate. Non-written discussions, conversations, or questions and answers regarding this Solicitation are preliminary in nature and are non-binding.

Submitted emails should have the solicitation number in the subject line. Question

Submission Deadline: June 12, 2026 by 2:00PM

Submit Questions to: Larry D. McDonnell
2019 Washington Street, East Charleston, WV 25305
Fax: (304) 558-3970
Email: Larry.D.McDonnell

5. VERBAL COMMUNICATION: Any verbal communication between the Vendor and any State personnel is not binding, including verbal communication at the mandatory pre-bid conference. Only information issued in writing and added to the Solicitation by an official written addendum by the Purchasing Division is binding.

6. BID SUBMISSION: All bids must be submitted on or before the date and time of the bid opening listed in section 7 below. Vendors can submit bids electronically through wvOASIS, in paper form delivered to the Purchasing Division at the address listed below either in person or by courier, or in facsimile form by faxing to the Purchasing Division at the number listed below. Notwithstanding the foregoing, the Purchasing Division may prohibit the submission of bids electronically through wvOASIS at its sole discretion. Such a prohibition will be contained and communicated in the wvOASIS system resulting in the Vendor's inability to submit bids through wvOASIS. The Purchasing Division will not accept bids or modification of bids via email.

Bids submitted in paper, facsimile, or via wvOASIS must contain a signature. Failure to submit a bid in any form without a signature will result in rejection of your bid.

A bid submitted in paper or facsimile form should contain the information listed below on the face of the submission envelope or fax cover sheet. Otherwise, the bid may be rejected by the Purchasing Division.

VENDOR NAME:

BUYER:

SOLICITATION NO.:

BID OPENING DATE:

BID OPENING TIME:

FAX NUMBER:

Any bid received by the Purchasing Division staff is considered to be in the possession of the Purchasing Division and will not be returned for any reason.

Bid Delivery Address and Fax Number:

Department of Administration, Purchasing Division 2019 Washington Street East

Charleston, WV 25305-0130

Fax: 304-558-3970

7. BID OPENING: Bids submitted in response to this Solicitation will be opened at the location identified below on the date and time listed below. Delivery of a bid after the bid opening date and time will result in bid disqualification. For purposes of this Solicitation, a bid is considered delivered when confirmation of delivery is provided by wvOASIS (in the case of electronic submission) or when the bid is time stamped by the official Purchasing Division time clock (in the case of hand delivery or via delivery by mail).

Bid Opening Date and Time: June 24, 2026 at 1:30PM EST

Bid Opening Location:

Department of Administration, Purchasing Division

2019 Washington Street East

Charleston, WV 25305-0130

8. ADDENDUM ACKNOWLEDGEMENT: Changes or revisions to this Solicitation will be made by an official written addendum issued by the Purchasing Division. Vendor should acknowledge receipt of all addenda issued with this Solicitation by completing an Addendum Acknowledgement Form. Failure to acknowledge addenda may result in bid disqualification. The addendum acknowledgement should be submitted with the bid to expedite document processing.

9. **BID FORMATTING:** Vendor should type or electronically enter the information onto its bid to prevent errors in the evaluation. Failure to type or electronically enter the information may result in bid disqualification.

10. **ALTERNATE MODEL OR BRAND:** Unless the box below is checked, any model, brand, or specification listed in this Solicitation establishes the acceptable level of quality only and is not intended to reflect a preference for, or in any way favor, a particular brand or vendor. Vendors may bid alternates to a listed model or brand provided that the alternate is at least equal to the model or brand and complies with the required specifications. The equality of any alternate being bid shall be determined by the State at its sole discretion. Any Vendor bidding an alternate model or brand **shall** clearly identify the alternate items in its bid and should include manufacturer's specifications, industry literature, and/or any other relevant documentation demonstrating the equality of the alternate items. Failure to provide information for alternate items **may** be grounds for rejection of a Vendor's bid.

☐ This Solicitation is based upon a standardized commodity established under W. Va. Code § 5A-3-61. Vendors are expected to bid the standardized commodity identified. Failure to bid the standardized commodity will result in your firm's bid being rejected.

11. **COMMUNICATION LIMITATIONS:** In accordance with West Virginia Code of State Rules §148-1-6.6.2, communication with the State of West Virginia or any of its employees regarding this Solicitation during the solicitation, bid, evaluation or award periods, except through the Purchasing Division, is strictly prohibited without prior Purchasing Division approval. Purchasing Division approval for such communication is implied for all agency delegated and exempt purchases.

12. **REGISTRATION:** Prior to Contract award, the apparent successful Vendor **must** be properly registered with the West Virginia Purchasing Division and must have paid the \$125 fee, if applicable.

13. **UNIT PRICE:** Unit prices **shall** prevail in cases of a discrepancy in the Vendor's bid.

14. **PREFERENCE:** Vendor Preference may be requested in purchases of motor vehicles or construction and maintenance equipment and machinery used in highway and other infrastructure projects. Any request for preference must be submitted in writing with the bid, must specifically identify the preference requested with reference to the applicable subsection of West Virginia Code § 5A-3-37, and must include with the bid any information necessary to evaluate and confirm the applicability of the requested preference. A request form to help facilitate the request can be found at: www.state.wv.us/admin/purchase/vrc/Venpref.pdf.

15A. RECIPROCAL PREFERENCE: The State of West Virginia applies a reciprocal preference to all solicitations for commodities and printing in accordance with W. Va. Code § 5A-3-37(b). In effect, non-resident vendors receiving a preference in their home states, will see that same preference granted to West Virginia resident vendors bidding against them in West Virginia. Any request for reciprocal preference must include with the bid any information necessary to evaluate and confirm the applicability of the preference. A request form to help facilitate the request can be found at: www.state.wv.us/admin/purchase/vrc/Venpref.pdf.

15. SMALL, WOMEN-OWNED, OR MINORITY-OWNED BUSINESSES:

For any solicitations publicly advertised for bid, in accordance with West Virginia Code §5A-3-37 and W. Va. CSR § 148-22-9, any non-resident vendor certified as a small, women-owned, or minority-owned business under W. Va. CSR § 148-22-9 shall be provided the same preference made available to any resident vendor. Any non-resident small, women-owned, or minority-owned business must identify itself as such in writing, must submit that writing to the Purchasing Division with its bid, and must be properly certified under W. Va. CSR § 148-22-9 prior to contract award to receive the preferences made available to resident vendors.

16. WAIVER OF MINOR IRREGULARITIES: The Director reserves the right to waive minor irregularities in bids or specifications in accordance with West Virginia Code of State Rules § 148-1-4.7.

17. ELECTRONIC FILE ACCESS RESTRICTIONS: Vendor must ensure that its submission in wvOASIS can be accessed and viewed by the Purchasing Division staff immediately upon bid opening. The Purchasing Division will consider any file that cannot be immediately accessed and viewed at the time of the bid opening (such as, encrypted files, password protected files, or incompatible files) to be blank or incomplete as context requires and are therefore unacceptable. A vendor will not be permitted to unencrypt files, remove password protections, or resubmit documents after bid opening to make a file viewable if those documents are required with the bid. A Vendor may be required to provide document passwords or remove access restrictions to allow the Purchasing Division to print or electronically save documents provided that those documents are viewable by the Purchasing Division prior to obtaining the password or removing the access restriction.

18. NON-RESPONSIBLE: The Purchasing Division Director reserves the right to reject the bid of any vendor as Non-Responsible in accordance with W. Va. Code of State Rules § 148-1-5.3, when the Director determines that the vendor submitting the bid does not have the capability to fully perform or lacks the integrity and reliability to assure good-faith performance.”

19. ACCEPTANCE/REJECTION: The State may accept or reject any bid in whole, or in part in accordance with W. Va. Code of State Rules § 148-1-4.6. and § 148-1-6.3.”

20. **WITH THE BID REQUIREMENTS:** In instances where these specifications require documentation or other information with the bid, and a vendor fails to provide it with the bid, the Director of the Purchasing Division reserves the right to request those items after bid opening and prior to contract award pursuant to the authority to waive minor irregularities in bids or specifications under W. Va. CSR § 148-1-4.7. This authority does not apply to instances where state law mandates receipt with the bid.

21. **EMAIL NOTIFICATION OF AWARD:** The Purchasing Division will attempt to provide bidders with e-mail notification of contract award when a solicitation that the bidder participated in has been awarded. For notification purposes, bidders must provide the Purchasing Division with a valid email address in the bid response. Bidders may also monitor wvOASIS or the Purchasing Division's website to determine when a contract has been awarded.

22. **EXCEPTIONS AND CLARIFICATIONS:** The Solicitation contains the specifications that **shall** form the basis of a contractual agreement. **Vendor shall clearly mark any exceptions, clarifications, or other proposed modifications in its bid.** Exceptions to, clarifications of, or modifications of a requirement or term and condition of the Solicitation may result in bid disqualification.

GENERAL TERMS AND CONDITIONS:

1. CONTRACTUAL AGREEMENT: Issuance of an Award Document signed by the Purchasing Division Director, or his designee, and approved as to form by the Attorney General's office constitutes acceptance by the State of this Contract made by and between the State of West Virginia and the Vendor. Vendor's signature on its bid, or on the Contract if the Contract is not the result of a bid solicitation, signifies Vendor's agreement to be bound by and accept the terms and conditions contained in this Contract.

2. DEFINITIONS: As used in this Solicitation/Contract, the following terms shall have the meanings attributed to them below. Additional definitions may be found in the specifications included with this Solicitation/Contract.

2.1. "Agency" or "Agencies" means the agency, board, commission, or other entity of the State of West Virginia that is identified on the first page of the Solicitation or any other public entity seeking to procure goods or services under this Contract.

2.2. "Bid" or "Proposal" means the vendors submitted response to this solicitation.

2.3. "Contract" means the binding agreement that is entered into between the State and the Vendor to provide the goods or services requested in the Solicitation.

2.4. "Director" means the Director of the West Virginia Department of Administration, Purchasing Division.

2.5. "Purchasing Division" means the West Virginia Department of Administration, Purchasing Division.

2.6. "Award Document" means the document signed by the Agency and the Purchasing Division, and approved as to form by the Attorney General, that identifies the Vendor as the contract holder.

2.7. "Solicitation" means the official notice of an opportunity to supply the State with goods or services that is published by the Purchasing Division.

2.8. "State" means the State of West Virginia and/or any of its agencies, commissions, boards, etc. as context requires.

2.9. "Vendor" or "Vendors" means any entity submitting a bid in response to the Solicitation, the entity that has been selected as the lowest responsible bidder, or the entity that has been awarded the Contract as context requires.

3. CONTRACT TERM; RENEWAL; EXTENSION: The term of this Contract shall be determined in accordance with the category that has been identified as applicable to this Contract below:

☐ **Term Contract**

Initial Contract Term: The Initial Contract Term will be for a period of _____. The Initial Contract Term becomes effective on the effective start date listed on the first page of this Contract, identified as the State of West Virginia contract cover page containing the signatures of the Purchasing Division, Attorney General, and Encumbrance clerk (or another page identified as _____), and the Initial Contract Term ends on the effective end date also shown on the first page of this Contract.

Renewal Term: This Contract may be renewed upon the mutual written consent of the Agency, and the Vendor, with approval of the Purchasing Division and the Attorney General's office (Attorney General approval is as to form only). Any request for renewal should be delivered to the Agency and then submitted to the Purchasing Division thirty (30) days prior to the expiration date of the initial contract term or appropriate renewal term. A Contract renewal shall be in accordance with the terms and conditions of the original contract. Unless otherwise specified below, renewal of this Contract is limited to _____ successive one (1) year periods or multiple renewal periods of less than one year, provided that the multiple renewal periods do not exceed the total number of months available in all renewal years combined. Automatic renewal of this Contract is prohibited. Renewals must be approved by the Vendor, Agency, Purchasing Division and Attorney General's office (Attorney General approval is as to form only)

☐ **Alternate Renewal Term** – This contract may be renewed for _____ successive _____ year periods or shorter periods provided that they do not exceed the total number of months contained in all available renewals. Automatic renewal of this Contract is prohibited. Renewals must be approved by the Vendor, Agency, Purchasing Division and Attorney General's office (Attorney General approval is as to form only)

Delivery Order Limitations: In the event that this contract permits delivery orders, a delivery order may only be issued during the time this Contract is in effect. Any delivery order issued within one year of the expiration of this Contract shall be effective for one year from the date the delivery order is issued. No delivery order may be extended beyond one year after this Contract has expired.

☐ **Fixed Period Contract:** This Contract becomes effective upon Vendor's receipt of the notice to proceed and must be completed within _____ days.

☐ **Fixed Period Contract with Renewals:** This Contract becomes effective upon Vendor's receipt of the notice to proceed and part of the Contract more fully described in the attached specifications must be completed within _____ days. Upon completion of the work covered by the preceding sentence, the vendor agrees that:

☐ the contract will continue for _____ years;

☐ the contract may be renewed for _____ successive _____ year periods or shorter periods provided that they do not exceed the total number of months contained in all available renewals. Automatic renewal of this Contract is prohibited. Renewals must be approved by the Vendor, Agency, Purchasing Division and Attorney General's Office (Attorney General approval is as to form only).

☒ **One-Time Purchase:** The term of this Contract shall run from the issuance of the Award Document until all of the goods contracted for have been delivered, but in no event will this Contract extend for more than one fiscal year.

☐ **Construction/Project Oversight:** This Contract becomes effective on the effective start date listed on the first page of this Contract, identified as the State of West Virginia contract cover page containing the signatures of the Purchasing Division, Attorney General, and Encumbrance clerk (or another page identified as _____), and continues until the project for which the vendor is providing oversight is complete.

☐ **Other:** Contract Term specified in _____

4. AUTHORITY TO PROCEED: Vendor is authorized to begin performance of this contract on the date of encumbrance listed on the front page of the Award Document unless either the box for "Fixed Period Contract" or "Fixed Period Contract with Renewals" has been checked in Section 3 above. If either "Fixed Period Contract" or "Fixed Period Contract with Renewals" has been checked, Vendor must not begin work until it receives a separate notice to proceed from the State. The notice to proceed will then be incorporated into the Contract via change order to memorialize the official date that work commenced.

5. QUANTITIES: The quantities required under this Contract shall be determined in accordance with the category that has been identified as applicable to this Contract below.

☐ **Open End Contract:** Quantities listed in this Solicitation/Award Document are approximations only, based on estimates supplied by the Agency. It is understood and agreed that the Contract shall cover the quantities actually ordered for delivery during the term of the Contract, whether more or less than the quantities shown.

☐ **Service:** The scope of the service to be provided will be more clearly defined in the specifications included herewith.

☐ **Combined Service and Goods:** The scope of the service and deliverable goods to be provided will be more clearly defined in the specifications included herewith.

☒ **One-Time Purchase:** This Contract is for the purchase of a set quantity of goods that are identified in the specifications included herewith. Once those items have been delivered, no additional goods may be procured under this Contract without an appropriate change order approved by the Vendor, Agency, Purchasing Division, and Attorney General's office.

☐ **Construction:** This Contract is for construction activity more fully defined in the specifications.

6. EMERGENCY PURCHASES: The Purchasing Division Director may authorize the Agency to purchase goods or services in the open market that Vendor would otherwise provide under this Contract if those goods or services are for immediate or expedited delivery in an emergency. Emergencies shall include, but are not limited to, delays in transportation or an unanticipated increase in the volume of work. An emergency purchase in the open market, approved by the Purchasing Division Director, shall not constitute a breach of this Contract and shall not entitle the Vendor to any form of compensation or damages. This provision does not excuse the State from fulfilling its obligations under a One-Time Purchase contract.

7. REQUIRED DOCUMENTS: All of the items checked in this section must be provided to the Purchasing Division by the Vendor as specified:

☐ **LICENSE(S) / CERTIFICATIONS / PERMITS:** In addition to anything required under the Section of the General Terms and Conditions entitled Licensing, the apparent successful Vendor shall furnish proof of the following licenses, certifications, and/or permits upon request and in a form acceptable to the State. The request may be prior to or after contract award at the State's sole discretion.

☐☐☐☐

The apparent successful Vendor shall also furnish proof of any additional licenses or certifications contained in the specifications regardless of whether or not that requirement is listed above.

8. INSURANCE: The apparent successful Vendor shall furnish proof of the insurance identified by a checkmark below prior to Contract award. The insurance coverages identified below must be maintained throughout the life of this contract. Thirty (30) days prior to the expiration of the insurance policies, Vendor shall provide the Agency with proof that the insurance mandated herein has been continued. Vendor must also provide Agency with immediate notice of any changes in its insurance policies, including but not limited to, policy cancelation, policy reduction, or change in insurers. The apparent successful Vendor shall also furnish proof of any additional insurance requirements contained in the specifications prior to Contract award regardless of whether that insurance requirement is listed in this section.

Vendor must maintain:

☒ **Commercial General Liability Insurance** in at least an amount of: \$1,000,000.00 per occurrence.

☐ **Automobile Liability Insurance** in at least an amount of: _____ per occurrence.

☐ **Professional/Malpractice/Errors and Omission Insurance** in at least an amount of: _____ per occurrence. Notwithstanding the forgoing, Vendor's are not required to list the State as an additional insured for this type of policy.

☐ **Commercial Crime and Third Party Fidelity Insurance** in an amount of: _____ per occurrence.

☐ **Cyber Liability Insurance** in an amount of: _____ per occurrence.

☐ **Builders Risk Insurance** in an amount equal to 100% of the amount of the Contract.

☐ **Pollution Insurance** in an amount of: _____ per occurrence.

☐ **Aircraft Liability** in an amount of: _____ per occurrence.

☐☐☐☐

9. WORKERS' COMPENSATION INSURANCE: Vendor shall comply with laws relating to workers compensation, shall maintain workers' compensation insurance when required, and shall furnish proof of workers' compensation insurance upon request.

10. VENUE: All legal actions for damages brought by Vendor against the State shall be brought in the West Virginia Claims Commission. Other causes of action must be brought in the West Virginia court authorized by statute to exercise jurisdiction over it.

11. LIQUIDATED DAMAGES: This clause shall in no way be considered exclusive and shall not limit the State or Agency's right to pursue any other available remedy. Vendor shall pay liquidated damages in the amount specified below or as described in the specifications:

☐ _____ for _____.

☐ Liquidated Damages Contained in the Specifications.

☒ Liquidated Damages Are Not Included in this Contract.

12. ACCEPTANCE: Vendor's signature on its bid, or on the certification and signature page, constitutes an offer to the State that cannot be unilaterally withdrawn, signifies that the product or service proposed by vendor meets the mandatory requirements contained in the Solicitation for that product or service, unless otherwise indicated, and signifies acceptance of the terms and conditions contained in the Solicitation unless otherwise indicated.

13. PRICING: The pricing set forth herein is firm for the life of the Contract, unless specified elsewhere within this Solicitation/Contract by the State. A Vendor's inclusion of price adjustment provisions in its bid, without an express authorization from the State in the Solicitation to do so, may result in bid disqualification. Notwithstanding the foregoing, Vendor must extend any publicly advertised sale price to the State and invoice at the lower of the contract price or the publicly advertised sale price.

14. PAYMENT IN ARREARS: Payments for goods/services will be made in arrears only upon receipt of a proper invoice, detailing the goods/services provided or receipt of the goods/services, whichever is later. Notwithstanding the foregoing, payments for software maintenance, licenses, or subscriptions may be paid annually in advance.

15. PAYMENT METHODS: Vendor must accept payment by electronic funds transfer and P-Card. (The State of West Virginia's Purchasing Card program, administered under contract by a banking institution, processes payment for goods and services through state designated credit cards.)

16. TAXES: The Vendor shall pay any applicable sales, use, personal property or any other taxes arising out of this Contract and the transactions contemplated thereby. The State of West Virginia is exempt from federal and state taxes and will not pay or reimburse such taxes.

17. ADDITIONAL FEES: Vendor is not permitted to charge additional fees or assess additional charges that were not either expressly provided for in the solicitation published by the State of West Virginia, included in the Contract, or included in the unit price or lump sum bid amount that Vendor is required by the solicitation to provide. Including such fees or charges as notes to the solicitation may result in rejection of vendor's bid. Requesting such fees or charges be paid after the contract has been awarded may result in cancellation of the contract.

18. FUNDING: This Contract shall continue for the term stated herein, contingent upon funds being appropriated by the Legislature or otherwise being made available. In the event funds are not appropriated or otherwise made available, this Contract becomes void and of no effect beginning on July 1 of the fiscal year for which funding has not been appropriated or otherwise made available. If that occurs, the State may notify the Vendor that an alternative source of funding has been obtained and thereby avoid the automatic termination. Non-appropriation or non-funding shall not be considered an event of default.

19. CANCELLATION: The Purchasing Division Director reserves the right to cancel this Contract immediately upon written notice to the vendor if the materials or workmanship supplied do not conform to the specifications contained in the Contract. The Purchasing Division Director may also cancel any purchase or Contract upon 30 days written notice to the Vendor in accordance with West Virginia Code of State Rules § 148-1-5.2.

20. TIME: Time is of the essence regarding all matters of time and performance in this Contract.

21. APPLICABLE LAW: This Contract is governed by and interpreted under West Virginia law without giving effect to its choice of law principles. Any information provided in specification manuals, or any other source, verbal or written, which contradicts or violates the West Virginia Constitution, West Virginia Code, or West Virginia Code of State Rules is void and of no effect.

22. COMPLIANCE WITH LAWS: Vendor shall comply with all applicable federal, state, and local laws, regulations and ordinances. By submitting a bid, Vendor acknowledges that it has reviewed, understands, and will comply with all applicable laws, regulations, and ordinances.

SUBCONTRACTOR COMPLIANCE: Vendor shall notify all subcontractors providing commodities or services related to this Contract that as subcontractors, they too are required to comply with all applicable laws, regulations, and ordinances. Notification under this provision must occur prior to the performance of any work under the contract by the subcontractor.

23. ARBITRATION: Any references made to arbitration contained in this Contract, Vendor's bid, or in any American Institute of Architects documents pertaining to this Contract are hereby deleted, void, and of no effect.

24. MODIFICATIONS: This writing is the parties' final expression of intent. Notwithstanding anything contained in this Contract to the contrary no modification of this Contract shall be binding without mutual written consent of the Agency, and the Vendor, with approval of the Purchasing Division and the Attorney General's office (Attorney General approval is as to form only). Any change to existing contracts that adds work or changes contract cost, and were not included in the original contract, must be approved by the Purchasing Division and the Attorney General's Office (as to form) prior to the implementation of the change or commencement of work affected by the change.

25. WAIVER: The failure of either party to insist upon a strict performance of any of the terms or provision of this Contract, or to exercise any option, right, or remedy herein contained, shall not be construed as a waiver or a relinquishment for the future of such term, provision, option, right, or remedy, but the same shall continue in full force and effect. Any waiver must be expressly stated in writing and signed by the waiving party.

26. SUBSEQUENT FORMS: The terms and conditions contained in this Contract shall supersede any and all subsequent terms and conditions which may appear on any form documents submitted by Vendor to the Agency or Purchasing Division such as price lists, order forms, invoices, sales agreements, or maintenance agreements, and includes internet websites or other electronic documents. Acceptance or use of Vendor's forms does not constitute acceptance of the terms and conditions contained thereon.

27. ASSIGNMENT: Neither this Contract nor any monies due, or to become due hereunder, may be assigned by the Vendor without the express written consent of the Agency, the Purchasing Division, the Attorney General's office (as to form only), and any other government agency or office that may be required to approve such assignments.

28. WARRANTY: The Vendor expressly warrants that the goods and/or services covered by this Contract will: (a) conform to the specifications, drawings, samples, or other description furnished or specified by the Agency; (b) be merchantable and fit for the purpose intended; and (c) be free from defect in material and workmanship.

29. STATE EMPLOYEES: State employees are not permitted to utilize this Contract for personal use and the Vendor is prohibited from permitting or facilitating the same.

30. PRIVACY, SECURITY, AND CONFIDENTIALITY: The Vendor agrees that it will not disclose to anyone, directly or indirectly, any such personally identifiable information or other confidential information gained from the Agency, unless the individual who is the subject of the information consents to the disclosure in writing or the disclosure is made pursuant to the Agency's policies, procedures, and rules. Vendor further agrees to comply with the Confidentiality Policies and Information Security Accountability Requirements, set forth in www.state.wv.us/admin/purchase/privacy.

31. YOUR SUBMISSION IS A PUBLIC DOCUMENT: Vendor's entire response to the Solicitation and the resulting Contract are public documents. As public documents, they will be disclosed to the public following the bid/proposal opening or award of the contract, as required by the competitive bidding laws of West Virginia Code §§ 5A-3-1 et seq., 5-22-1 et seq., and 5G-1-1 et seq. and the Freedom of Information Act West Virginia Code §§ 29B-1-1 et seq.

DO NOT SUBMIT MATERIAL YOU CONSIDER TO BE CONFIDENTIAL, A TRADE SECRET, OR OTHERWISE NOT SUBJECT TO PUBLIC DISCLOSURE.

Submission of any bid, proposal, or other document to the Purchasing Division constitutes your explicit consent to the subsequent public disclosure of the bid, proposal, or document. The Purchasing Division will disclose any document labeled "confidential," "proprietary," "trade secret," "private," or labeled with any other claim against public disclosure of the documents, to include any "trade secrets" as defined by West Virginia Code § 47-22-1 et seq. All submissions are subject to public disclosure without notice.

32. LICENSING: In accordance with West Virginia Code of State Rules § 148-1-6.1.e, Vendor must be licensed and in good standing in accordance with any and all state and local laws and requirements by any state or local agency of West Virginia, including, but not limited to, the West Virginia Secretary of State's Office, the West Virginia Tax Department, West Virginia Insurance Commission, or any other state agency or political subdivision. Obligations related to political subdivisions may include, but are not limited to, business licensing, business and occupation taxes, inspection compliance, permitting, etc. Upon request, the Vendor must provide all necessary releases to obtain information to enable the Purchasing Division Director or the Agency to verify that the Vendor is licensed and in good standing with the above entities.

SUBCONTRACTOR COMPLIANCE: Vendor shall notify all subcontractors providing commodities or services related to this Contract that as subcontractors, they too are required to be licensed, in good standing, and up-to-date on all state and local obligations as described in this section. Obligations related to political subdivisions may include, but are not limited to, business licensing, business and occupation taxes, inspection compliance, permitting, etc. Notification under this provision must occur prior to the performance of any work under the contract by the subcontractor.

33. ANTITRUST: In submitting a bid to, signing a contract with, or accepting a Award Document from any agency of the State of West Virginia, the Vendor agrees to convey, sell, assign, or transfer to the State of West Virginia all rights, title, and interest in and to all causes of action it may now or hereafter acquire under the antitrust laws of the United States and the State of West Virginia for price fixing and/or unreasonable restraints of trade relating to the particular commodities or services purchased or acquired by the State of West Virginia. Such assignment shall be made and become effective at the time the purchasing agency tenders the initial payment to Vendor.

34. VENDOR NON-CONFLICT: Neither Vendor nor its representatives are permitted to have any interest, nor shall they acquire any interest, direct or indirect, which would compromise the performance of its services hereunder. Any such interests shall be promptly presented in detail to the Agency.

35. VENDOR RELATIONSHIP: The relationship of the Vendor to the State shall be that of an independent contractor and no principal-agent relationship or employer-employee relationship is contemplated or created by this Contract. The Vendor as an independent contractor is solely liable for the acts and omissions of its employees and agents. Vendor shall be responsible for selecting, supervising, and compensating any and all individuals employed pursuant to the terms of this Solicitation and resulting contract. Neither the Vendor, nor any employees or subcontractors of the Vendor, shall be deemed to be employees of the State for any purpose whatsoever. Vendor shall be exclusively responsible for payment of employees and contractors for all wages and salaries, taxes, withholding payments, penalties, fees, fringe benefits, professional liability insurance premiums, contributions to insurance and pension, or other deferred compensation plans, including but not limited to, Workers' Compensation and Social Security obligations, licensing fees, etc. and the filing of all necessary documents, forms, and returns pertinent to all of the foregoing.

Vendor shall hold harmless the State, and shall provide the State and Agency with a defense against any and all claims including, but not limited to, the foregoing payments, withholdings, contributions, taxes, Social Security taxes, and employer income tax returns.

36. INDEMNIFICATION: The Vendor agrees to indemnify, defend, and hold harmless the State and the Agency, their officers, and employees from and against: (1) Any claims or losses for services rendered by any subcontractor, person, or firm performing or supplying services, materials, or supplies in connection with the performance of the Contract; (2) Any claims or losses resulting to any person or entity injured or damaged by the Vendor, its officers, employees, or subcontractors by the publication, translation, reproduction, delivery, performance, use, or disposition of any data used under the Contract in a manner not authorized by the Contract, or by Federal or State statutes or regulations; and (3) Any failure of the Vendor, its officers, employees, or subcontractors to observe State and Federal laws including, but not limited to, labor and wage and hour laws.

37. NO DEBT CERTIFICATION: In accordance with West Virginia Code §§ 5A-3-10a and 5-22-1(i), the State is prohibited from awarding a contract to any bidder that owes a debt to the State or a political subdivision of the State. By submitting a bid, or entering into a contract with the State, Vendor is affirming that (1) for construction contracts, the Vendor is not in default on any monetary obligation owed to the state or a political subdivision of the state, and (2) for all other contracts, neither the Vendor nor any related party owe a debt as defined above, and neither the Vendor nor any related party are in employer default as defined in the statute cited above unless the debt or employer default is permitted under the statute.

38. CONFLICT OF INTEREST: Vendor, its officers or members or employees, shall not presently have or acquire an interest, direct or indirect, which would conflict with or compromise the performance of its obligations hereunder. Vendor shall periodically inquire of its officers, members and employees to ensure that a conflict of interest does not arise. Any conflict of interest discovered shall be promptly presented in detail to the Agency.

39. REPORTS: Vendor shall provide the Agency and/or the Purchasing Division with the following reports identified by a checked box below:

☐ Such reports as the Agency and/or the Purchasing Division may request. Requested reports may include, but are not limited to, quantities purchased, agencies utilizing the contract, total contract expenditures by agency, etc.

☐ Quarterly reports detailing the total quantity of purchases in units and dollars, along with a listing of purchases by agency. Quarterly reports should be delivered to the Purchasing Division via email at purchasing.division@wv.gov.

40. BACKGROUND CHECK: In accordance with W. Va. Code § 15-2D-3, the State reserves the right to prohibit a service provider's employees from accessing sensitive or critical information or to be present at the Capitol complex based upon results addressed from a criminal background check. Service providers should contact the West Virginia Division of Protective Services by phone at (304) 558-9911 for more information.

41. PREFERENCE FOR USE OF DOMESTIC STEEL PRODUCTS: Except when authorized by the Director of the Purchasing Division pursuant to W. Va. Code § 5A-3-56, no contractor may use or supply steel products for a State Contract Project other than those steel products made in the United States. A contractor who uses steel products in violation of this section may be subject to civil penalties pursuant to W. Va. Code § 5A-3-56. As used in this section:

- a. "State Contract Project" means any erection or construction of, or any addition to, alteration of or other improvement to any building or structure, including, but not limited to, roads or highways, or the installation of any heating or cooling or ventilating plants or other equipment, or the supply of and materials for such projects, pursuant to a contract with the State of West Virginia for which bids were solicited on or after June 6, 2001.
- b. "Steel Products" means products rolled, formed, shaped, drawn, extruded, forged, cast, fabricated or otherwise similarly processed, or processed by a combination of two or more or such operations, from steel made by the open hearth, basic oxygen, electric furnace, Bessemer or other steel making process.
- c. The Purchasing Division Director may, in writing, authorize the use of foreign steel products if:
 1. The cost for each contract item used does not exceed one tenth of one percent (.1%) of the total contract cost or two thousand five hundred dollars (\$2,500.00), whichever is greater. For the purposes of this section, the cost is the value of the steel product as delivered to the project; or
 2. The Director of the Purchasing Division determines that specified steel materials are not produced in the United States in sufficient quantity or otherwise are not reasonably available to meet contract requirements.

42. PREFERENCE FOR USE OF DOMESTIC ALUMINUM, GLASS, AND STEEL: In Accordance with W. Va. Code § 5-19-1 et seq., and W. Va. CSR § 148-10-1 et seq., for every contract or subcontract, subject to the limitations contained herein, for the construction, reconstruction, alteration, repair, improvement or maintenance of public works or for the purchase of any item of machinery or equipment to be used at sites of public works, only domestic aluminum, glass or steel products shall be supplied unless the spending officer determines, in writing, after the receipt of offers or bids, (1) that the cost of domestic aluminum, glass or steel products is unreasonable or inconsistent with the public interest of the State of West Virginia, (2) that domestic aluminum, glass or steel products are not produced in sufficient quantities to meet the contract requirements, or (3) the available domestic aluminum, glass, or steel do not meet the contract specifications. This provision only applies to public works contracts awarded in an amount more than fifty thousand dollars (\$50,000) or public works contracts that require more than ten thousand pounds of steel products.

The cost of domestic aluminum, glass, or steel products may be unreasonable if the cost is more than twenty percent (20%) of the bid or offered price for foreign made aluminum, glass, or steel products. If the domestic aluminum, glass or steel products to be supplied or produced in a “substantial labor surplus area”, as defined by the United States Department of Labor, the cost of domestic aluminum, glass, or steel products may be unreasonable if the cost is more than thirty percent (30%) of the bid or offered price for foreign made aluminum, glass, or steel products. This preference shall be applied to an item of machinery or equipment, as indicated above, when the item is a single unit of equipment or machinery manufactured primarily of aluminum, glass or steel, is part of a public works contract and has the sole purpose or of being a permanent part of a single public works project. This provision does not apply to equipment or machinery purchased by a spending unit for use by that spending unit and not as part of a single public works project.

All bids and offers including domestic aluminum, glass or steel products that exceed bid or offer prices including foreign aluminum, glass or steel products after application of the preferences provided in this provision may be reduced to a price equal to or lower than the lowest bid or offer price for foreign aluminum, glass or steel products plus the applicable preference. If the reduced bid or offer prices are made in writing and supersede the prior bid or offer prices, all bids or offers, including the reduced bid or offer prices, will be reevaluated in accordance with this rule.

43. INTERESTED PARTY SUPPLEMENTAL DISCLOSURE: W. Va. Code § 6D-1-2 requires that for contracts with an actual or estimated value of at least \$1 million, the Vendor must submit to the Agency a disclosure of interested parties prior to beginning work under this Contract. Additionally, the Vendor must submit a supplemental disclosure of interested parties reflecting any new or differing interested parties to the contract, which were not included in the original pre-work interested party disclosure, within 30 days following the completion or termination of the contract. A copy of that form is included with this solicitation or can be obtained from the WV Ethics Commission. This requirement does not apply to publicly traded companies listed on a national or international stock exchange. A more detailed definition of interested parties can be obtained from the form referenced above.

44. PROHIBITION AGAINST USED OR REFURBISHED: Unless expressly permitted in the solicitation published by the State, Vendor must provide new, unused commodities, and is prohibited from supplying used or refurbished commodities, in fulfilling its responsibilities under this Contract.

45. VOID CONTRACT CLAUSES: This Contract is subject to the provisions of West Virginia Code § 5A-3-62, which automatically voids certain contract clauses that violate State law.

46. ISRAEL BOYCOTT: Bidder understands and agrees that, pursuant to W. Va. Code § 5A-3-63, it is prohibited from engaging in a boycott of Israel during the term of this contract.

DESIGNATED CONTACT: Vendor appoints the individual identified in this Section as the Contract Administrator and the initial point of contact for matters relating to this Contract.

(Printed Name and Title) Faith Hays, Ph.D. Regional Manager Southeast

(Address) 1 TW Alexander Dr. Durham, NC 27703

(Phone Number) / (Fax Number) 919-425-2534

(email address) fahays@shimadzu.com

CERTIFICATION AND SIGNATURE: By signing below, or submitting documentation through wvOASIS, I certify that: I have reviewed this Solicitation/Contract in its entirety; that I understand the requirements, terms and conditions, and other information contained herein; that this bid, offer or proposal constitutes an offer to the State that cannot be unilaterally withdrawn; that the product or service proposed meets the mandatory requirements contained in the Solicitation/Contract for that product or service, unless otherwise stated herein; that the Vendor accepts the terms and conditions contained in the Solicitation, unless otherwise stated herein; that I am submitting this bid, offer or proposal for review and consideration; that this bid or offer was made without prior understanding, agreement, or connection with any entity submitting a bid or offer for the same material, supplies, equipment or services; that this bid or offer is in all respects fair and without collusion or fraud; that this Contract is accepted or entered into without any prior understanding, agreement, or connection to any other entity that could be considered a violation of law; that I am authorized by the Vendor to execute and submit this bid, offer, or proposal, or any documents related thereto on Vendor's behalf; that I am authorized to bind the vendor in a contractual relationship; and that to the best of my knowledge, the vendor has properly registered with any State agency that may require registration.

By signing below, I further certify that I understand this Contract is subject to the provisions of West Virginia Code § 5A-3-62, which automatically voids certain contract clauses that violate State law; and that pursuant to W. Va. Code 5A-3-63, the entity entering into this contract is prohibited from engaging in a boycott against Israel.

Shimadzu Scientific Instruments

(Company)
Faith Hays

(Signature of Authorized Representative)

Faith Hays, Ph.D. Regional Manager Southeast

(Printed Name and Title of Authorized Representative) (Date)

919-425-2534

(Phone Number) (Fax Number)

fahays@shimadzu.com

(Email Address)

REQUEST FOR QUOTATION
Triple Quadrupole GC/MS and Single Quadrupole GC/MS
CRFQ AGR26*44

SPECIFICATIONS

- 1. PURPOSE AND SCOPE:** The West Virginia Purchasing Division is soliciting bids on behalf of the West Virginia Department of Agriculture to establish a contract for the one-time purchase of a Single Quadrupole Gas Chromatograph Mass Spectrometer (GC/MS) with Robotic Multiple Injection Techniques including Liquid Injection, Static and Dynamic Headspace, Flame Ionization Detector (FID), and Solid Phase Microextraction and a Triple Quadrupole Gas Chromatograph Mass Spectrometer (GC/MS/MS) with a Robotic Multiple Injection Techniques, including Liquid Injection, Static and Dynamic Headspace, and Solid Phase Microextraction, workstations, and all supplies necessary to connect the instrument along with installation, and warranty.

The Single Quadrupole Gas Chromatograph Mass Spectrometer (GC/MS) will be using methods AOAC 2007.01 Pesticides Residues in Foods by Acetonitrile Extraction and Partitioning Magnesium Sulfate and CLG-TOX1.01 USDA Identification of Poisons and Toxins by GC/MS.

The Triple Quadrupole Gas Chromatograph Mass Spectrometer (GC/MS/MS) will be using methods Simultaneous Screening of 322 Residual Pesticides in Fruits and Vegetables Using GC-MS/MS this article is from MDPI Foods 2023,12,3001 and Determination of Pesticides and Industrial Chemicals Using Modified QuEChERS and GC-MS/MS and LC-MS/MS FDA Document Number: 000500.

- 2. DEFINITIONS:** The terms listed below shall have the meanings assigned to them below. Additional definitions can be found in section 2 of the General Terms and Conditions.
- 2.1 “Contract Item”** means the Gas Chromatograph/Mass Spectrometer systems, autosamplers, detectors, software, accessories, installation, training, warranty, and related deliverables described in this solicitation.
- 2.2 “Pricing Page”** means the pages, contained in wvOASIS or attached as Exhibit A, upon which Vendor should list its proposed price for the Contract Items.
- 2.3 “Solicitation”** means the official notice of an opportunity to supply the State with goods or services that is published by the Purchasing Division.
- 2.4 “Deliverables”** means all items being purchased through this RFQ.
- 2.5 “Maintenance Plan”** means routine service conducted by the vendor that is recommended to keep the instrument fully operational.
- 2.6 “Warranty”** means the written warranty of the manufacturer of a new instrument of its condition and fitness for use, including any terms or conditions precedent to the enforcement of obligations under that warranty.

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- 2.7 “Service”** means performing routine maintenance work or repair to the instrument or software.
- 2.8 “Gas Chromatograph (GC)”** is an analytical instrument used to separate, quantify and identify volatile components within a mixture.
- 2.9 “Mass Spectrometer (MS)”** is an analytical instrument that identifies and quantifies molecules with a sample by ionizing them, separating the resulting fragments based on their mass-to-charge ratio using electric or magnetic fields, and detecting them to produce a spectrum.
- 2.10 “Pounds per square inch gauge (psig)”** it measures pressure relative to the surrounding atmospheric pressure (ambient air), rather than a perfect vacuum.
- 2.11 “Electronic pressure control (EPC)”** using digital sensors, microprocessors, and solenoid valves to automatically monitor and regulate gas or fluid pressure in a system.
- 2.12 “Atomic mass units (amu)”** unit of mass used to express atomic and molecular weights.
- 2.13 “Electron volt (eV)”** is a small unit of energy equal to the amount of kinetic energy gained (or lost) by a single electron accelerating from rest through an electric potential difference of one volt in a vacuum.
- 2.14 “Multiple Reaction Monitoring (MRM)”** a highly sensitive and selective mass spectrometry technique typically performed on triple-quadrupole instruments used to quantify specific molecules within complex samples.
- 2.15 “Solid Phase Microextraction (SPME)”** a rapid, solvent-free sample preparation technique that integrates sampling, extraction, and concentration into one step.
- 2.16 “Static Headspace (SHS)”** an equilibrium-based sampling technique where volatiles in a sealed vial reach a stable concentration, allowing a portion of the gas to be analyzed.
- 2.17 “Dynamic Headspace (DHS)”** purge-and-trap, continuously purges the sample with inert gas, forcing all volatiles into a sorbent trap for higher sensitivity.

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2.18 “Capillary Flow Technology (CFT)” refers to specialized, inert, low-thermal-mass devices in gas chromatography (GC) that enable reliable, leak-free, and flexible capillary connections. It enhances GC/MS performance by managing flow paths, supporting backflushing to prevent column contamination, and enabling complex, multi-column analysis without venting the system.

2.19 “Hz” means the standard international unit of measurement for frequency.

2.20 “Flame Ionization Detector (FID)” means a detector that is paired with a gas chromatograph for the analysis of organic compounds.

2.21 “USDA” United State Department of Agriculture.

2.22 “NIST” – National Institute of Standards and Technology.

2.23 “NIST Wiley” – National Institute of Standards and Technology Wiley Mass Spectrometer library.

2.24 “MDPI” – Multidisciplinary Digital Publishing Institute.

2.25 “AOAC 2007.01” – Association of Official Agriculture Chemists Method 2007.01 Pesticides Residues in Foods by Acetonitrile Extraction and Partitioning Magnesium Sulfate.

2.26 “CLG-TOX1.01” – Chemistry Laboratory Guidebook for Toxicology Methods.

2.27 “GC/MS” – Single quadrupole Gas Chromatograph Mass Spectrometer.

2.28 “GC/MS/MS” – Triple quadrupole Gas Chromatograph Mass Spectrometer.

3. GENERAL REQUIREMENTS:

3.1 Mandatory Contract Item Requirements: Contract Item must meet or exceed the mandatory requirements listed below.

3.2 GC/MS/MS System

3.2.1 GC Specifications

3.2.1.1 The oven temperature must have a temperature range of ambient to minimum of 450 Celsius.

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- 3.2.1.2 The injection port temperature must have a temperature range of ambient to minimum of 450 Celsius.
- 3.2.1.3 The GC must have the following injection modes Hot Split/Splitless, Cold Split/Splitless, all in pulsed mode, solvent vent mode, and residue removal mode.
- 3.2.1.4 The capillary flow technology of backflushing and column switching. Provide the columns that are listed in the methods list in the Purpose and Scope section.
- 3.2.1.5 The electronic pressure control (EPC) pressure range needs to be 0 to minimum of 100 pounds per square inch gauge (psig).
- 3.2.1.6 The GC must have two inlets.
- 3.2.1.7 The GC must be set up so that it can use helium and hydrogen carrier gas.

3.2.2 Triple Quadrupole MS/MS Specifications

- 3.2.2.1 The ion source must have a dual-filament assembly and temperature minimum of 350 Celsius.
- 3.2.2.2 The mass range must have a maximum of 1100 atomic mass units (amu).
- 3.2.2.3 The electron range must be a minimum of 10 and a maximum of 300 electron volt (eV).
- 3.2.2.4 The transfer line temperature from the Gas Chromatography to the Mass Spectrometer must be a minimum of 400 Celsius.
- 3.2.2.5 The vacuum pump must be a Dry-Scroll-Pump oil-free or any equivalent oil-free pump.

3.2.3 Autosampler Specifications

- 3.2.3.1 The autosampler must have the following Robotic Multiple Injection Techniques, including Liquid Injection, Static and Dynamic Headspace, and Solid Phase Microextraction.
- 3.2.3.2 The autosampler must have a chiller for 2, 10 and 20 milliliter (mL) autosampler vials. The temperature range must be minimum 4 to 40 Celsius.
- 3.2.3.3 The autosampler must have a Solid Phase Microextraction (SPME) with a Fiber Conditioning Module and an agitator capable of heating to a maximum of 350 Celsius.
- 3.2.3.4 The autosampler must have Static and Dynamic Headspace and an agitator capable of heating to a maximum of 200 Celsius.

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3.2.3.5 The autosampler must have a minimum of 2 solvent rinse and waste vials.

3.2.3.6 The autosampler must have a minimum of 162 position vial trays for 2 milliliters (mL) vials and a minimum of 60 position vial trays for 10 and 20 milliliters (mL).

3.2.3.7 The autosampler must be able to inject a minimum of 10 microliters (μL) of liquid.

3.2.3.8 The autosampler headspace syringe must have a minimum volume of 2500 microliters (μL).

3.2.3.9 The autosampler must have a centrifugation that can hold 2, 10, and 20 milliliters (mL) vials.

3.2.4 Computer Specifications

3.2.4.1 The computers, monitors, and printers must be provided by the vendor for both the GC-MS/MS and GC-MS systems.

3.2.4.2 For the GC-MS/MS, the computer must come with the GC-MS/MS operating software, and the software must have offline data review and processing ability.

3.2.4.3 For the GC-MS/MS, the computer must come with the latest NIST Mass Spectral Library with MS/MS software.

3.2.4.4 For the GC-MS/MS, the computer must come with Pesticides and Environment Pollutant MRM database with optimized transitions.

3.2.4.5 For the GC-MS, the computer must come with the GC-MS operating software, and the software must have offline data review and processing ability.

3.2.4.6 For the GC-MS, the computer must come with the latest NIST, WILEY/NIST, Maurer and Weber Drug Mass Spectral Library with MS software.

3.2.5 Battery Backup Specification

3.2.5.1 The vendor must provide battery backup units for both the GC-MS system and the GC-MS/MS system.

3.2.5.2 The battery backup units must be able to run the systems for a minimum of three (3) minutes.

3.2.6 Training Specification

3.2.6.1 The vendor must provide on-site training for both the GC-MS and GC-MS/MS systems.

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- 3.2.6.2** On-site training for 3 full 8 hours days and a minimum of 3 people for the GC-MS.
- 3.2.6.3** On-site training for 3 full 8 hours days and a minimum of 3 people for the GC-MS/MS.
- 3.2.6.4** All training, and associated travel costs to the site, costs must be included in the total cost of the instrument.

3.3 GC/MS System

3.3.1 GC Specifications

- 3.3.1.1** The oven temperature must have a temperature range of ambient to a minimum of 450 Celsius.
- 3.3.1.2** The injection port temperature must have a temperature range of ambient to a minimum of 450 Celsius.
- 3.3.1.3** The GC must have the following injection modes Hot Split/Splitless, Cold Split/Splitless, all in pulsed mode, solvent vent mode, and residue removal mode.
- 3.3.1.4** The capillary flow technology of backflushing and column switching. Provide the columns that are listed in the methods list in the Purpose and Scope section.
- 3.3.1.5** The electronic pressure control (EPC) pressure range needs to be 0 to minimum of 100 pounds per square inch gauge (psig). The GC must have two inlets.
- 3.3.1.6** The GC must be set up so that it can use helium and hydrogen carrier gas.

3.3.2 Single Quadrupole MS Specification

- 3.3.2.1** The ion source must have a dual-filament assembly and temperature minimum of 350 Celsius.
- 3.3.2.2** The mass range must be minimum of 0.6 and maximum of 1091 atomic mass units (amu).
- 3.3.2.3** The transfer line temperature from the Gas Chromatography to the Mass Spectrometer must be a minimum of 350 Celsius.
- 3.3.2.4** The vacuum pump must be a Dry-Scroll-Pump oil-free or any equivalent oil-free pump.

3.3.3 Flame Ionization Detector (FID) Specifications

- 3.3.3.1** The Gas Chromatograph shall include a Flame Ionization Detector (FID) fully integrated with the GC System.

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Triple Quadrupole GC/MS and Single Quadrupole GC/MS
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- 3.3.3.2 The FID shall support capillary column operation and be compatible with split, splitless, cold split/splitless, and programmed temperature vaporization injection techniques.
- 3.3.3.3 The FID shall have a maximum operating temperature of at least 450 degrees Celsius.
- 3.3.3.4 The FID shall include electronic pressure control or electronic flow control for hydrogen, air, and makeup gases.
- 3.3.3.5 The FID shall have automatic flame ignition and automatic flame-out detection.
- 3.3.3.6 The FID data acquisition rate shall support fast chromatography applications with a minimum acquisition frequency of 200 Hz.

3.3.4 Autosampler Specifications

- 3.3.4.1 The autosampler must have the following Robotic Multiple Injection Techniques, including Liquid Injection, Static and Dynamic Headspace, and Solid Phase Microextraction.
- 3.3.4.2 The autosampler must have a chiller for 2, 10 and 20 milliliter (mL) autosampler vials. The temperature must be minimum of 4 to 40 Celsius.
- 3.3.4.3 The autosampler must have a Solid Phase Microextraction (SPME) with a Fiber Conditioning Module and an agitator capable of heating to a maximum of 350 Celsius.
- 3.3.4.4 The autosampler must have Static and Dynamic Headspace and an agitator capable of heating to a maximum of 200 Celsius.
- 3.3.4.5 The autosampler must have a minimum of 2 solvent rinse and waste vials.
- 3.3.4.6 The autosampler must have a minimum of 162 position vial trays for 2 milliliters (mL) vials and a minimum of 60 position vial trays for 10 and 20 milliliters (mL).
- 3.3.4.7 The autosampler must be able to inject a minimum of 10 microliters (μL) liquid.
- 3.3.4.8 The autosampler headspace must have a minimum volume of 2500 microliters (μL).
- 3.3.4.9 The autosampler must have a centrifugation that can hold 2, 10, and 20 milliliters (mL) vials.

3.3.5 Shipping

- 3.3.5.1 Shipping fee must be incorporated into unit price.

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3.3.6 Warranty

3.3.6.1 The vendor must provide a minimum of one-year parts and labor warranty on all items.

3.3.7 Installation and Validation

3.3.7.1 Vendor must perform the installation (labor and supplies included) of the Triple Quadrupole GC/MS, Single Quadrupole GC/MS and the Robotic Autosampler.

3.3.7.2 The vendor must provide a written validation of the system's performance after installation. The following is Performance Verification what should be completed after installing GC-MS and GC-MS/MS: Perform Checkout Tune, Perform Tune Verification, Verify EI Performance, Perform PCI Autotune, Verify PCI Performance, Perform NCI autotune, and Verify NCI Performance.

3.3.8 Maintenance, Support, and Calibration

3.3.8.1 Maintenance services shall be performed by the vendor who shall agree to have a certified and trained staff and replacement parts available.

3.3.8.2 Vendor must respond to service calls by phone or email within a maximum of twenty-four (24) hours of the request.

3.3.8.3 Vendor must be capable of completing all repair and/or service requests within a maximum of five (5) business days, excluding state holidays and weekends, from the time of request.

3.3.8.4 Following any on-site maintenance, calibration, or repair services, the Contractor shall perform post-service verification and calibration of the instrument at its final, installed operational location. All testing must be conducted using certified reference materials (CRMs) or NIST-traceable standards, in alignment with manufacturer specifications and ISO/IEC 17025 accredited methods (or equivalent).

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3.3.8.5 The instrument must meet or exceed the original manufacturer's performance tolerances for accuracy and precision under actual local operating conditions. The Contractor shall provide a formal Calibration/Verification Certificate detailing the 'as-found' and 'as-left' data, which must be approved by the Client prior to the instrument being returned to active service.

3.3.8.6 Reports of service will be signed by State of WV authorized laboratory personnel to ensure work has been completed.

4. CONTRACT AWARD:

4.1 Contract Award: The Contract is intended to provide Agencies with a purchase price for the Contract Items. The Contract shall be awarded to the Vendor that provides the Contract Items meeting the required specifications for the lowest overall total cost as shown on the Pricing Pages.

4.2 Pricing Page: Vendor must complete the Pricing Page by entering information in each column for item number, model/brand name, unit price and extended amount. If there is no charge for any deliverable, indicate in the cell with "no charge". The bidder/vendor information must be completed and include an authorized signature. Vendor should complete the Pricing Page in full as failure to complete the Pricing Page in its entirety may result in Vendor's bid being disqualified.

Vendor should type or electronically enter the information into the Pricing Page to prevent errors in the evaluation.

5. PAYMENT:

5.1 Payment: Vendor shall accept payment in accordance with the payment procedures of the State of West Virginia.

6. DELIVERY AND RETURN:

6.1 Shipment and Delivery: Vendor shall ship the Contract Items immediately after being awarded this Contract and receiving a purchase order or notice to proceed. Vendor shall deliver the Contract Items within 90 days after receiving a purchase order or notice to proceed. Contract Items must be delivered to Agency at 313 Gus R. Douglass Lane, Charleston, WV 25312.

6.2 Late Delivery: The Agency placing the order under this Contract must be notified in writing if the shipment of the Contract Items will be delayed for any reason. Any delay in delivery that could cause harm to an Agency will be grounds for cancellation of the Contract, and/or obtaining the Contract Items from a third party.

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Triple Quadrupole GC/MS and Single Quadrupole GC/MS
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Any Agency seeking to obtain the Contract Items from a third party under this provision must first obtain approval of the Purchasing Division.

6.3 Delivery Payment/Risk of Loss: Vendor shall deliver the Contract Items F.O.B. destination to the Agency's location.

6.4 Return of Unacceptable Items: If the Agency deems the Contract Items to be unacceptable, the Contract Items shall be returned to Vendor at Vendor's expense and with no restocking charge. Vendor shall either make arrangements for the return within five (5) days of being notified that items are unacceptable, or permit the Agency to arrange for the return and reimburse Agency for delivery expenses. If the original packaging cannot be utilized for the return, Vendor will supply the Agency with appropriate return packaging upon request. All returns of unacceptable items shall be F.O.B. the Agency's location. The returned product shall either be replaced, or the Agency shall receive a full credit or refund for the purchase price, at the Agency's discretion.

6.5 Return Due to Agency Error: Items ordered in error by the Agency will be returned for credit within 30 days of receipt, F.O.B. Vendor's location. Vendor shall not charge a restocking fee if returned products are in a resalable condition. Items shall be deemed to be in a resalable condition if they are unused and in the original packaging. Any restocking fee for items not in a resalable condition shall be the lower of the Vendor's customary restocking fee or 5% of the total invoiced value of the returned items.

7. VENDOR DEFAULT:

7.1 The following shall be considered a vendor default under this Contract.

7.1.1 Failure to provide Contract Items in accordance with the requirements contained herein.

7.1.2 Failure to comply with other specifications and requirements contained herein.

7.1.3 Failure to comply with any laws, rules, and ordinances applicable to the Contract Services provided under this Contract.

7.1.4 Failure to remedy deficient performance upon request.

7.2 The following remedies shall be available to Agency upon default.

7.2.1 Immediate cancellation of the Contract.

7.2.2 Immediate cancellation of one or more release orders issued under this Contract.

7.2.3 Any other remedies available in law or equity.

EXHIBIT A - Pricing Page
Triple Quadrupole GC/MS and Single Quadrupole GC/MS
CRFQ AGR26*XX

Section No.	Description	Model #/Brand Name	Quantity	Unit Price	Extended Amount
3.3	Single Quadrupole Gas Chromatograph Mass Spectrometer (GC/MS) with Robotic Multiple Injection Techniques including Liquid Injection, Static and Dynamic Headspace, Flame Ionization Detector (FID), and Solid Phase Microextraction, workstation, and all required parts/accessories	Shimadzu Scientific Instruments, Inc GCMS-2020NXNC and	1	\$186,264.70	\$186,264.70
3.2	Triple Quadrupole Gas Chromatograph Mass Spectrometer (GC/MS/MS) with a Robotic Multiple Injection Techniques, including Liquid Injection, Static and Dynamic Headspace, and Solid Phase Microextraction, workstation, and all required parts/accessories	Shimadzu Scientific Instruments, Inc GCMS-8040NXNC	1	\$246,801.85	\$ 246,801.85
3.3.6	Warranty/Preventative Maintenance Service		1	\$0	\$0 -
3.3.7	Installation		1	\$0	\$0 -
	Failure to use this form may result in disqualification		GRAND TOTAL		\$433,066.55-
	Bidder / Vendor Information				
Name:	Faith Hays				
Address:	7102 Riverwood Drive				
	Columbia, MD 21046				
Phone:	919-425-2534				
Email Address:	fahays@shimadzu.com				
Authorized Signature:	<i>Faith Hays</i>				

Customer:

Larry McDonnell
State of West Virginia -Department of Agriculture
313 Gus R Douglas Lane
Charleston, WV 25305
Phone:
Fax:
E-mail: larry.d.mcdonnell@wv.gov

Sales Engineer:

Rex Jackson
Shimadzu Scientific Instruments
1 TW Alexander Drive, Suite 100
Durham, NC 27703
Regional Office: (800) 951-9167 Ext.
Direct Dial:
E-mail: rmjackson@shimadzu.com

Sales Proposal

Quotation: SSI-289118-Z9F4

Expiration: 9/24/2026

Quote Description:

GCMS-2020 single quadrupole EI/NCI/PCI mass spectrometer with robotic tool changer autosampler for liquid/SHS/DHS/SPME with conditioning station, oil-free dry scroll pump, FID detector, PC/Monitor/Software and all requested libraries
GCMS-8040 triple quadrupole EI/NCI/PCI mass spectrometer with robotic tool changer autosampler for liquid/SHS/DHS/SPME with conditioning station, oil-free dry scroll pump, PC/Monitor/Software and all requested libraries

Proposed Ship Date: 30 Days/ARO

FOB: DESTINATION **Ship Method:** BEST WAY

Shipping Terms: PREPAID

Incoterms: FOB

Additional Information:

Service coverage selections are optioned. Up to 4 years of post-warranty coverage can be purchased to lock in discounted pricing. Installment payments of service contracts are possible.
NEW 3YVP Service also optioned. Three years of FULL Warranty coverage with PM visit during 1st year warranty and Scheduled annual PPM services in years 2 and 3.

For proposal questions or modifications, please contact your sales representative.

For Order Placement:

Reference Quotation Number on Purchase Order and if applicable, attach your current Tax Exempt Certificate to your order request for proper billing.

Please provide the on-site contact name and contact information such as email address or phone number for delivery on the PO.

Please note that state taxes, local taxes and freight, if applicable, will be added at invoicing.
Forward official tax exempt documentation if applicable.

Shimadzu Scientific Instruments
7102 Riverwood Drive, Columbia, MD 21046
Toll Free: 800-477-1227
Local: 410-381-1227 Fax: 410-381-6781
E-mail: customer.service@shimadzu.com

International:
Fax: 410-309-6130
E-mail: icsc@shimadzu.com

Thank you for your interest in Shimadzu Scientific Instruments.

Authorization Signature*



Patrick Fromal

Date: 6/24/2026

*Sales Proposal is not valid without Authorized Signature.

Sales Quotation - please reference the quotation when submitting purchase order.

GCMS SQ NCI

	Product #	Qty	Description	Price Per Unit	Disc't %	Ext'd Price
1	225-44012-42	1	GCMS-QP2020NXNC W/O RP+L 115V	\$98,719.00	50.00%	\$49,359.50
2	220-90649-10	1	GCMS New SQ System Install Kit	\$3,798.00	35.00%	\$2,468.70
3	227-35013-11	1	Installation Consumables Kit for GCMS NX Series	\$646.00	15.00%	\$549.10
4	220-94592-13	1	GCMS Computer, LabSolutions FL Software for GCMS SQ, and Library Kit for Install	\$20,750.00	35.00%	\$13,487.50
5	220-94701-50	1	GCMS Oil-less Rough Pump Kit for Install	\$15,451.00	15.00%	\$13,133.35
6	221-77100-41	1	SPL-2030	\$4,353.00	35.00%	\$2,829.45
7	201-48576-15	1	Tubing, M-Type Female to 1/8", 15cm	\$28.00	0.00%	\$28.00
8	225-10167-91	1	SPL capillary adaptor for GVF ferrule (MS)	\$86.00	0.00%	\$86.00
9	220-90053-01	1	Union, 1/8" Stainless Steel	\$55.00	0.00%	\$55.00
10	221-77200-41	1	FID-2030	\$5,441.00	45.00%	\$2,992.55
11	201-48576-15	2	Tubing, M-Type Female to 1/8", 15cm	\$28.00	0.00%	\$56.00
12	221-73576-15	1	Adapter, LMF to 1/8" Tubing Adapter	\$29.00	0.00%	\$29.00
13	220-94797-06	1	Standards, GC, GC FID/FTD/ECD/BID Sensitivity Test Mix	\$161.00	0.00%	\$161.00
14	220-90053-01	3	Union, 1/8" Stainless Steel	\$55.00	0.00%	\$165.00
15	220-94953-51	1	AOC-6000 Plus RTC 85 LIQ+HS, Standard Model	\$58,937.00	15.00%	\$50,096.45
16	225-31111-06	1	AOC-6000 Agitator Inserts for 10mL vials 6/pk	\$1,049.00	15.00%	\$891.65
17	220-94953-00	1	Mounting Kit, AOC-6000 to GC-2030	\$2,044.00	15.00%	\$1,737.40
18	225-31111-31	1	PAL3-RACK R60	\$1,792.00	15.00%	\$1,523.20
19	223-66141-51	1	(AOC) Instrument control license for AOC-6000/plus in LabSolutions WS/DB/CS	\$3,772.00	15.00%	\$3,206.20
20	223-19390-51	1	(AOC) Instrument control software disk for AOC-6000/plus in LabSolutions; license separate -WS/DB/CS	\$793.00	15.00%	\$674.05
21	220-94928-50	1	Smart SPME Fiber Kit	\$12,402.00	15.00%	\$10,541.70
22	225-31110-37	1	SPME Arrow Conditioning Station	\$8,750.00	15.00%	\$7,437.50
23	227-35359-01	1	Smart Syringe, 2.5mL Headspace, AOC-6000	\$1,108.00	15.00%	\$941.80
24	220-97823-34	2	UPS 4200VA, NXT NPTU4200-O-N, for GCMS and LCMS SQ	\$9,573.00	15.00%	\$16,274.10
25	225-30514-91	1	GC/MS ForensicToxicological Database Ver.2	\$6,865.00	15.00%	\$5,835.25
26	220-94774-00	1	Option (GCMS) - Benzodiazapine library (disk)	\$365.00	15.00%	\$310.25
27	TIER 3 I&F	1	Tier 3 Installation and Customer Familiarization	\$5,580.00	75.00%	\$1,395.00
28	1YW	1	1 YEAR WARRANTY	\$0.00	0.00%	\$0.00

\$272,341.00 \$186,264.70
GCMS TQ 8040 NCI

	Product #	Qty	Description	Price Per Unit	Disc't %	Ext'd Price
29	225-45011-42	1	GCMS-TQ8040NXNC W/O RP+L 115V	\$186,997.00	50.00%	\$93,498.50
30	220-90649-20	1	GCMS New TQ System Install Kit	\$4,431.00	35.00%	\$2,880.15
31	227-35013-11	1	Installation Consumables Kit for GCMS NX Series	\$646.00	15.00%	\$549.10
32	220-94592-14	1	GCMS Computer, Labsolutions FL Software for GCMS TQ, and Library Kit for Install	\$26,715.00	15.00%	\$22,707.75
33	220-94701-50	1	GCMS Oil-less Rough Pump Kit for Install	\$15,451.00	15.00%	\$13,133.35
34	221-77100-41	1	SPL-2030	\$4,353.00	35.00%	\$2,829.45
35	201-48576-15	1	Tubing, M-Type Female to 1/8", 15cm	\$28.00	0.00%	\$28.00
36	225-10167-91	1	SPL capillary adaptor for GVF ferrule (MS)	\$86.00	0.00%	\$86.00
37	220-90053-01	1	Union, 1/8" Stainless Steel	\$55.00	0.00%	\$55.00
38	220-94953-51	1	AOC-6000 Plus RTC 85 LIQ+HS, Standard Model	\$58,937.00	15.00%	\$50,096.45
39	225-31111-06	1	AOC-6000 Agitator Inserts for 10mL vials 6/pk	\$1,049.00	15.00%	\$891.65
40	220-94953-00	1	Mounting Kit, AOC-6000 to GC-2030	\$2,044.00	15.00%	\$1,737.40
41	225-31111-31	1	PAL3-RACK R60	\$1,792.00	15.00%	\$1,523.20
42	223-66141-51	1	(AOC) Instrument control license for AOC-6000/plus in LabSolutions WS/DB/CS	\$3,772.00	35.00%	\$2,451.80
43	223-19390-51	1	(AOC) Instrument control software disk for AOC-6000/plus in LabSolutions; license separate -WS/DB/CS	\$793.00	35.00%	\$515.45
44	220-94928-50	1	Smart SPME Fiber Kit	\$12,402.00	15.00%	\$10,541.70
45	225-31110-37	1	SPME Arrow Conditioning Station	\$8,750.00	15.00%	\$7,437.50
46	227-35359-01	1	Smart Syringe, 2.5mL Headspace, AOC-6000	\$1,108.00	15.00%	\$941.80
47	227-35345-03	1	Smart Fiber, SPME, DVB/C-WR/PDMS 3 pc, AOC-6000	\$971.00	15.00%	\$825.35
48	225-50712-00	1	Gas Filter Kit for He Carrier Gas, Single Baseplate, He-Specific O2/Moisture/Hydrocarbon Filter	\$614.00	15.00%	\$521.90
49	201-52760-01	1	GAS PIPE, CONNECTION MF-MF 1.5 M	\$20.00	0.00%	\$20.00
50	201-48555-50	1	Tubing, GC, MN2-MN2 50mm	\$30.00	0.00%	\$30.00
51	220-97823-34	2	UPS 4200VA, NXT NPTU4200-O-N, for GCMS and LCMS SQ	\$9,573.00	15.00%	\$16,274.10
52	225-45235-91	1	(GCMS) Smart Pesticides Database 2.2 disk - WS/DB	\$2,917.00	15.00%	\$2,479.45
53	225-45245-91	1	(GCMS) Smart Environment Database 1.1 disk - WS/DB	\$3,278.00	15.00%	\$2,786.30
54	TIER 3 I&F	1	Tier 3 Installation and Customer Familiarization	\$5,580.00	75.00%	\$1,395.00
55	1YW	1	1 YEAR WARRANTY	\$0.00	0.00%	\$0.00
56	220-94760-00	1	MAURER, PFLEGER, WEBER GCMS LIBRARY	\$12,430.00	15.00%	\$10,565.50

Company Name: State of West Virginia -Department of Agriculture
 Quote Number: SSI-289118-Z9F4
 Activation Date: 6/24/2026
 Expiration Date: 9/24/2026

\$374,395.00	\$246,801.85
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Total List Price:	\$646,736.00
Total Line Item Discount:	\$213,669.45
Quote Sub-Total:	\$433,066.55
Estimated Freight:	PREPAID
Total Amount:	\$433,066.55

By placing an Order for any Products related to this Sales Proposal and Quotation, Customer agrees to the terms and conditions at <https://www.ssi.shimadzu.com/terms/General-Terms-Conditions-of-Sale.html>, which are incorporated herein and applicable hereto. SSI reserves the right to update its Terms and Conditions at any time, however the terms and conditions in effect at the date of delivery of Products related to this Sales Proposal and Quotation shall apply to that purchase.

Sales Quotation - please reference the quotation when submitting purchase order.

Optional Items

Optional Items:

GCMS SQ NCI

	Product #	Qty	Description	List Price	Disc't %	Ext'd Price
1	225-31015-91	1	Smart EI/CI Source	\$3,813.00	0.00%	\$3,813.00

GCMS TQ 8040 NCI

	Product #	Qty	Description	List Price	Disc't %	Ext'd Price
2	225-31015-91	1	Smart EI/CI Source	\$3,813.00	15.00%	\$3,241.05

Service Agreement Plans Available

As Quoted

Quantity	Plan Name	Plan Price	Disc't %	Ext'd Price	Products Covered
1	Premium Preventative Maintenance	\$15,440.00	20.00%	\$12,352.00	GCMS-QP2020NXNC W/O RP+L 115V, GCMS-TQ8040NXNC W/O RP+L 115V, SPL-2030, FID-2030, AOC-6000 Plus RTC 85 LIQ +HS, Standard Model
1	Extended Warranty Plus	\$39,760.00	20.00%	\$31,808.00	GCMS-QP2020NXNC W/O RP+L 115V, GCMS-TQ8040NXNC W/O RP+L 115V, SPL-2030, FID-2030, AOC-6000 Plus RTC 85 LIQ +HS, Standard Model
1	Three Year(36 month) Value Plan Service Agreement	\$58,605.00	20.00%	\$46,884.00	GCMS-QP2020NXNC W/O RP+L 115V, GCMS-TQ8040NXNC W/O RP+L 115V, SPL-2030, FID-2030, AOC-6000 Plus RTC 85 LIQ +HS, Standard Model

Descriptions of Service Coverage

Preventative Maintenance

Preventative Maintenance (PM) visits will be scheduled by SSI at the mutual convenience of the buyer and SSI, or performed during any other service visit. PM visits, when provided under this Agreement, may include necessary cleaning, adjustments, verification, lubrication and parts replacement according to the PM checklist. Labor, travel expenses, and selected consumable parts will be included during the PM visit at no additional cost to the buyer.

Premium Preventative Maintenance

Premium Preventative Maintenance visits will be scheduled by SSI at the mutual convenience of the customer and SSI, or performed during any other service visit. This Premium PM will be performed by SSI according to established SSI procedures. Premium PM visits, when performed under this Agreement, will include necessary cleaning, adjustments, verification, lubrication and parts replacement. Labor, travel expenses and selected consumables parts* (list of parts available upon customer request) will be included during the Premium PM visit at no additional cost to the customer. A travel zone fee is added to the agreement to cover travel costs. Purchase of the Premium PM option does not excuse Customer from performing normal daily, weekly or monthly maintenance that may be required.

Extended Warranty

Extended Warranty coverage includes all labor and parts (excluding consumables) necessary to restore the products to operating specifications.

This coverage level is not available for MS products and the associated turbo and roughing pumps. The MS products require a coverage level which includes a Premium PM.

Extended Warranty Plus

A combination of one scheduled Premium PM visit and Extended Warranty Coverage. Premium Preventative Maintenance visits will be scheduled by SSI at the mutual convenience of the customer and SSI, or performed during any other service visit. Premium PM visits, when performed under this Agreement, will include necessary cleaning, adjustments, verification, lubrication and parts replacement. Labor, travel expenses and selected consumables parts* (list of parts available upon customer request) will be included during the Premium PM visit at no additional cost to the customer. The extended Warranty Includes all labor and parts (excluding consumables outside of PM) necessary to restore the products to operating specifications. A travel zone charge is added to the contract to cover travel costs. In the event of a covered product failure, SSI will use its best effort to provide on-demand service.

Premium Total Coverage

This level of agreement provides the customer with a level of coverage includes all labor and non-consumable parts, a Premium PM visit, and in addition provides for the replacement of consumable parts outside of a PM visit at no additional cost to the buyer. Use of this level of Service will be monitored by SSI and in the event that the buyer's use does not exceed two visits during the effective dates of the agreement, the buyer will be entitled to an agreed upon rebate at the end of the agreement term. This rebate must be applied to the purchase of future service agreements or other services offered by SSI.

Three Year Value Plan

Three Year Value Plan Service Agreement:
Following system installation, provides 3 consecutive years of FULL warranty coverage. Customer Care follow-up including PM level service Year1. Scheduled Premium Preventative Maintenance (PPM) on-site service during Year2 and Year3.

Sales Quotation - please reference the quotation when submitting purchase order.

Line Item Descriptions

Product # Description

GCMS SQ NCI

225-44012-42 GCMS-QP2020NXNC W/O RP+L 115V

220-90649-10 GCMS New SQ System Install Kit

GCMS New SQ System Install Kit contains all necessary small parts (i.e. tubing, plug, standard, filters, etc) required to install a new single quad GCMS system.

227-35013-11 Installation Consumables Kit for GCMS NX Series

Convenient kit with all consumables necessary to keep the GCMS operational through the first month of ownership.

Includes 10uL syringe, graphite vespel ferrule (0.4,) 10/pk, graphite vespel ferrule (0.5,) 10/pk, premium green septa, 50pk, deactivated liner with wool for split, 5/pk, deactivated liner with wool for splitless, 5/pk, pre-cleaned O-ring, 10/pk, stainless steel nut, 5/pk. Replacement for 227-35013-01.

220-94592-13 GCMS Computer, LabSolutions FL Software for GCMS SQ, and Library Kit for Install

Includes PC, monitor, LabSolutions GCMS license, LabSolutions GCMS/Insight install DVD and Wiley-NIST mass spectral library.

220-94701-50 GCMS Oil-less Rough Pump Kit for Install

Edwards-nXDS 10i-Dry-Scroll-Pump

221-77100-41 SPL-2030

The split/splitless injection module for the GC 2030 is optimized for narrow-bore (0.25 -0.53 mm) capillary column injections using a patented Linear Velocity control mode; heats from ambient to 450 C. It is easily converted to packed column with PN 220-94680-01.

201-48576-15 Tubing, M-Type Female to 1/8", 15cm

Tubing with MF and 1/8" connections, for connecting metric GC fitting to standard English fitting.

225-10167-91 SPL capillary adaptor for GVF ferrule (MS)

220-90053-01 Union, 1/8" Stainless Steel

Stainless steel 1/8" union for use with all stainless steel tubing and any adapter tubing like MF-1/8"

221-77200-41 FID-2030

The Flame Ionization Detector for the GC-2030 is the most common GC detector and is able to detect almost all organic (carbon-containing) compounds.

201-48576-15 Tubing, M-Type Female to 1/8", 15cm

Tubing with MF and 1/8" connections, for connecting metric GC fitting to standard English fitting.

221-73576-15 Adapter, LMF to 1/8" Tubing Adapter

Tubing with LMF and 1/8" connections, for connecting left-handed metric GC fitting to standard English fitting.

For use with all Hydrogen connections

220-94797-06 Standards, GC, GC FID/FTD/ECD/BID Sensitivity Test Mix

Standard Test Mix

Installation test mix for testing GCs with FID, FTD, ECD or BID.

220-90053-01 Union, 1/8" Stainless Steel

Stainless steel 1/8" union for use with all stainless steel tubing and any adapter tubing like MF-1/8"

220-94953-51 AOC-6000 Plus RTC 85 LIQ+HS, Standard Model

AOC-6000 Plus Robotic Tool Changing system
 85cm autosampler for liquid and headspace injection; automated syringe changing unit

The system consists of one X,Y rail assembly; Z-head unit (carriage and cover), one park station, one 10-uL liquid syringe tool with two SMART syringes, one 2.5-mL headspace syringe tool with two SMART syringes, standard wash/waste station, two tray holders, three VT-54 racks, three VT-15 racks and an agitator. An R60 rack included as managed item. AOC-6000 control software must be added depending on the acquisition software.

225-31111-06 AOC-6000 Agitator Inserts for 10mL vials 6/pk

Set of 6x inserts for the Agitator to place 10mL vials instead of the 20mL vials

220-94953-00 Mounting Kit, AOC-6000 to GC-2030

225-31111-31 PAL3-RACK R60

Aluminum Sample Rack with 60 slots for 10/20mL headspace vials.
 Vials not included.

223-66141-51 (AOC) Instrument control license for AOC-6000/plus in LabSolutions WS/DB/CS

This is an electronic license for control of one AOC-6000/6000plus in LabSolutions WS/DB/CS.

Not supported for use with AOC-5000 or AOC-5000xt.

223-19390-51 (AOC) Instrument control software disk for AOC-6000/plus in LabSolutions; license separate -WS/DB/CS

This is the installer for AOC-6000/6000 plus control software, for AOC control in LabSolutions software.

AOC license also required 223-66141-51.

Not supported for use with AOC-5000 or AOC-5000xt.
 Supported LabSolutions versions
 LabSolutions LC/GC ver. 5.87 or later
 LabSolutions DB/CS ver. 6.71 or later
 Windows OS operation
 Windows 7 Pro 32bit SP1 or later
 Windows 7 Pro 64bit SP1 or later
 Windows 10 32bit/64bit or later
 Instrument controlled
 AOC-6000 Plus (entry, standard, high-end),
 ROM: Ver. 3.1.6.2 (build 3.1.20049.1010) or later (version 2.00 and up)
 AOC-6000 (entry, standard, high-end),
 ROM: Ver. 2.2.8 (build 2.2.16067.1330) or later (version 1.00 and up)

220-94928-50 Smart SPME Fiber Kit

Smart SPME fiber kit, consisting of:
 1 pc SPME Tool
 1 pc Smart SPME Fiber Assortment Kit (SFIB-SEL5-S2)
 1 pc SPME Performance Evaluation Mix

Smart SPME fiber kit, consisting of:
 1 pc SPME Tool
 1 pc Smart SPME Fiber Assortment Kit (SFIB-SEL5-S2)
 1 pc SPME Performance Evaluation Mix

225-31110-37 SPME Arrow Conditioning Station

The AOC-6000 SPME Arrow conditioning station is a heated port where the SPME Arrow or fiber can be conditioned.

227-35359-01 Smart Syringe, 2.5mL Headspace, AOC-6000

Smart Syringe, 2.5mL Headspace, AOC-6000 can be used with AOC-6000 and AOC-6000Plus

2.5mL HS Syringe, 57mm needle length, 23 guage with a PTFE Plunger

220-97823-34 UPS 4200VA, NXT NPTU4200-O-N, for GCMS and LCMS SQ

Double-conversion true sine wave output, IGBT rectifier and inverter with internal isolation transformer and manual bypass.

Voltage (VAC) 208
 Voltage Range (VAC) 176 – 275
 Frequency (Hz) 60
 Connection NEMA L6-30P Plug
 Rated Current (A) 24
 Receptacles: (8) NEMA 5-20R (1) NEMA L6-20R, (1) NEMA L6-15R

225-30514-91 GC/MS ForensicToxicological Database Ver.2

This product can be used for GCMS-SQ and TQ series. In Ver. 2, the number of compounds in the database has been increased from 1012 to 2210, and includes information for compounds where standard samples are difficult to obtain, such as commonly abused drugs and drugs linked to deliberate poisonings. This database therefore provides total support for toxicological analysis with GC-MS.

220-94774-00 Option (GCMS) - Benzodiazepine library (disk)

BENZODIAZEPINE LIBRARY

TIER 3 I&F Tier 3 Installation and Customer Familiarization
1YW 1 YEAR WARRANTY

1 YEAR WARRANTY

1 YEAR WARRANTY

GCMS TQ 8040 NCI

225-45011-42 GCMS-TQ8040NXNC W/O RP+L 115V
220-90649-20 GCMS New TQ System Install Kit

GCMS New TQ System Install Kit contains all necessary small parts (i.e. tubing, plug, standard, filters, etc) required to install a new triple quad GCMS system.

227-35013-11 Installation Consumables Kit for GCMS NX Series

Convenient kit with all consumables necessary to keep the GCMS operational through the first month of ownership.

Includes 10uL syringe, graphite vespel ferrule (0.4,) 10/pk, graphite vespel ferrule (0.5,) 10/pk, premium green septa, 50pk, deactivated liner with wool for split, 5/pk, deactivated liner with wool for splitless, 5/pk, pre-cleaned O-ring, 10/pk, stainless steel nut, 5/pk. Replacement for 227-35013-01.

220-94592-14 GCMS Computer, Labsolutions FL Software for GCMS TQ, and Library Kit for Install
220-94701-50 GCMS Oil-less Rough Pump Kit for Install

Edwards-nXDS 10i-Dry-Scroll-Pump

221-77100-41 SPL-2030

The split/splitless injection module for the GC 2030 is optimized for narrow-bore (0.25 -0.53 mm) capillary column injections using a patented Linear Velocity control mode; heats from ambient to 450 C. It is easily converted to packed column with PN 220-94680-01.

201-48576-15 Tubing, M-Type Female to 1/8", 15cm

Tubing with MF and 1/8" connections, for connecting metric GC fitting to standard English fitting.

225-10167-91 SPL capillary adaptor for GVF ferrule (MS)
220-90053-01 Union, 1/8" Stainless Steel

Stainless steel 1/8" union for use with all stainless steel tubing and any adapter tubing like MF-1/8"

220-94953-51 AOC-6000 Plus RTC 85 LIQ+HS, Standard Model

AOC-6000 Plus Robotic Tool Changing system
 85cm autosampler for liquid and headspace injection; automated syringe changing unit

The system consists of one X,Y rail assembly; Z-head unit (carriage and cover), one park station, one 10-uL liquid syringe tool with two SMART syringes, one 2.5-mL headspace syringe tool with two SMART syringes, standard wash/waste station, two tray holders, three VT-54 racks, three VT-15 racks and an agitator. An R60 rack included as managed item. AOC-6000 control software must be added depending on the acquisition software.

- 225-31111-06 AOC-6000 Agitator Inserts for 10mL vials 6/pk**
 Set of 6x inserts for the Agitator to place 10mL vials instead of the 20mL vials
- 220-94953-00 Mounting Kit, AOC-6000 to GC-2030**
- 225-31111-31 PAL3-RACK R60**
 Aluminum Sample Rack with 60 slots for 10/20mL headspace vials.
 Vials not included.
- 223-66141-51 (AOC) Instrument control license for AOC-6000/plus in LabSolutions WS/DB/CS**
 This is an electronic license for control of one AOC-6000/6000plus in LabSolutions WS/DB/CS.
 Not supported for use with AOC-5000 or AOC-5000xt.
- 223-19390-51 (AOC) Instrument control software disk for AOC-6000/plus in LabSolutions; license separate -WS/DB/CS**
 This is the installer for AOC-6000/6000 plus control software, for AOC control in LabSolutions software.
 AOC license also required 223-66141-51.
 Not supported for use with AOC-5000 or AOC-5000xt.
 Supported LabSolutions versions
 LabSolutions LC/GC ver. 5.87 or later
 LabSolutions DB/CS ver. 6.71 or later
 Windows OS operation
 Windows 7 Pro 32bit SP1 or later
 Windows 7 Pro 64bit SP1 or later
 Windows 10 32bit/64bit or later
 Instrument controlled
 AOC-6000 Plus (entry, standard, high-end),
 ROM: Ver. 3.1.6.2 (build 3.1.20049.1010) or later (version 2.00 and up)
 AOC-6000 (entry, standard, high-end),
 ROM: Ver. 2.2.8 (build 2.2.16067.1330) or later (version 1.00 and up)
- 220-94928-50 Smart SPME Fiber Kit**
 Smart SPME fiber kit, consisting of:
 1 pc SPME Tool
 1 pc Smart SPME Fiber Assortment Kit (SFIB-SEL5-S2)
 1 pc SPME Performance Evaluation Mix
 Smart SPME fiber kit, consisting of:
 1 pc SPME Tool
 1 pc Smart SPME Fiber Assortment Kit (SFIB-SEL5-S2)
 1 pc SPME Performance Evaluation Mix
- 225-31110-37 SPME Arrow Conditioning Station**
 The AOC-6000 SPME Arrow conditioning station is a heated port where the SPME Arrow or fiber can be conditioned.
- 227-35359-01 Smart Syringe, 2.5mL Headspace, AOC-6000**
 Smart Syringe, 2.5mL Headspace, AOC-6000 can be used with AOC-6000 and AOC-6000Plus
 2.5mL HS Syringe, 57mm needle length, 23 guage with a PTFE Plunger
- 227-35345-03 Smart Fiber, SPME, DVB/C-WR/PDMS 3 pc, AOC-6000**
 Smart SPME Fiber DVB/C-WR/PDMS, 3 pcs
 Smart SPME Fiber DVB/C-WR/PDMS, 3 pcs
- 225-50712-00 Gas Filter Kit for He Carrier Gas, Single Baseplate, He-Specific O2/Moisture/Hydrocarbon Filter**
 Includes 1-position baseplate with 1/8" stainless steel inlet fitting and M-type outlet fitting, and 1 He-specific oxygen/moisture/hydrocarbon trap.
- 201-52760-01 GAS PIPE, CONNECTION MF-MF 1.5 M**
- 201-48555-50 Tubing, GC, MN2-MN2 50mm**

220-97823-34 UPS 4200VA, NXT NPTU4200-O-N, for GCMS and LCMS SQ

Double-conversion true sine wave output, IGBT rectifier and inverter with internal isolation transformer and manual bypass.

Voltage (VAC) 208
 Voltage Range (VAC) 176 – 275
 Frequency (Hz) 60
 Connection NEMA L6-30P Plug
 Rated Current (A) 24
 Receptacles: (8) NEMA 5-20R (1) NEMA L6-20R, (1) NEMA L6-15R

225-45235-91 (GCMS) Smart Pesticides Database 2.2 disk - WS/DB

This product can be used for GCMS-SQ and TQ series. The Smart Pesticides Database version 2.2 the number of registered compounds has increased from 480 to 530. Introduce this database to customers such as institutes for health, health centers, food manufacturers, restaurant chains for residual pesticides in foods.

This product consists of an instruction manual and a CD-ROM containing method files, database files, and an instruction video.

This product can be used in GCMS-SQ and TQ series. This product can only be installed on one Shimadzu GC/MS (/MS) system. If customers wish to use this product on two or more systems, they must purchase the corresponding number of this product. The database comes in Excel format, so prepare Excel 2019 (32-bit or 64-bit version), or Excel 2021 (32-bit or 64-bit version).

In Ver. 2, the number of registered compounds has been increased from 480 to 530 by supporting standard mixtures outside Japan. Furthermore, retention indices are registered for all the components, enabling easy updating of retention times via the AART (Automatic Adjustment of Retention Time) function. Analysis by the internal standard method is also supported, since information is registered for compounds that can be used as internal standard substances. This product consists of an instruction manual and a CD-ROM containing method files, database files, and an instruction video.

The library can be used on both LabSolutions GCMS and GCMSsolution. When using with GCMSsolution, GCMSsolution Ver. 4.44 or later is required (if using with Excel 64-bit, Ver.4.53SP1 or later is required). When using with LabSolutions DB/CS, LabSolutions Ver.6.116 or later is required.

225-45245-91 (GCMS) Smart Environment Database 1.1 disk - WS/DB

This product can only be used for GCMS-TQ series. Smart Environmental Database contains the information required for MRM analysis, and is registered with 527 components including stable isotope labeled compounds. By using the database in combination with Smart MRM, a method creation function in GCMSsolution or LabSolutions GCMS, users can automatically create multicomponent batch analysis methods easily and appropriately, reducing complicated analysis preparations prior to creating calibration curves. This product can only be used for GCMS-TQ series.

The product consists of a user manual and a CD-ROM that contains method files and database file.

The product can only be used with GCMS-TQ series. It cannot be used with GCMS-QP series.

The product can only be installed on one Shimadzu GC/MS system. If the customer would like to install the database on two or more systems, arrange for them to purchase the appropriate number of products.

Microsoft Excel is required to run this database. Please prepare Excel described below. Product name: Microsoft Excel 2019 (32-bit, 64-bit), or Excel 2021 (32-bit, 64-bit) Vendor: Microsoft (<http://www.microsoft.com/en-us/default.aspx>)

The library can be used on both LabSolutions GCMS and GCMSsolution. When using with GCMSsolution, GCMSsolution Ver. 4.30 or later is required (if using with Excel 64-bit, Ver.4.53SP1 or later is required). When using with LabSolutions DB/CS, LabSolutions Ver.6.116 or later is required.

TIER 3 I&F Tier 3 Installation and Customer Familiarization
1YW 1 YEAR WARRANTY

1 YEAR WARRANTY

1 YEAR WARRANTY

220-94760-00 MAURER, PFLEGER, WEBER GCMS LIBRARY

Maurer, Pfleger, Weber (MPW) Library of Drugs, Poisons, Pesticides, Pollutants and their Metabolites 2011 is the world's most comprehensive reference for scientists wishing to keep pace with recent developments in clinical and forensic toxicology. The MPW Library, Edition 2011, consists of 9000 compounds, including novel therapeutics, designer drugs, herbal drugs, AIDS therapeutics, and 5,200 metabolites. All substances are classified according to their toxicological categories.

Information within the library includes compound names, chemical structure, molecular mass, retention index, CAS registry number, and major pharmacological category.

Optional Item Descriptions

Product #	Description
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GCMS SQ NCI

225-31015-91 Smart EI/CI Source

GCMS TQ 8040 NCI

225-31015-91 Smart EI/CI Source

Specification Sheet

GCMS-TQ8040 NX

Gas Chromatograph Mass Spectrometer



Smart Performance

Enabling highly sensitive simultaneous analysis of multiple components

Smart Productivity

Achieving superior productivity through dedication to efficiency

Smart Operation

Supporting easy creation of methods and data analysis

The fusion of these three Smart features makes this universal triple quadrupole GCMS applicable in any field, where it is sure to deliver the utmost in performance.

Gas Chromatograph

Model	Nexis™ GC-2030
Oven Temperature	Ambient + 2 to 450 °C
Retention Time Repeatability	<0.0008min* ¹
Flow Control	Constant flow, constant pressure, constant liner velocity

Injection Port Temperature	Ambient to 450 °C
AFC Pressure Range	0 to 1035 kPa
Peak Area Repeatability	<1% RSD* ¹
Oven Ramp Rate	Max 120°C/min* ²

Mass Spectrometer

GCMS Interface

Type	Direct connection with capillary column
Temperature	50 to 350 °C

Ion Source

Type	Front access for easy maintenance
Ionization	EI (standard) EI, PCI, NCI (option)
Filament	Dual, automatic switching with shield placed between filament and source box (patented)
Electron Energy	10 to 200 eV
Emission Current	5 to 250 µA

Vacuum System

Main Pump	Dual inlet turbo molecular pump 190 L/second + 170 L/second (He)
Fore Pump	Oil rotary pump, 30 L/minute (60 Hz)
Column Flow	10 mL/minute (He)

DI Probe (Option)

Temperature	Room temperature to 500 °C
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Mass Analyzer and Detector

Mass Analyzer	Metal quadrupole mass filter with pre-rods
Collision Cell	UFSweeper™, 0 to 60 eV Argon collision gas
Mass Range	<i>m/z</i> 10 to 1090
Mass Resolution	0.4 to 3.0 u (FWHM)
Mass Axis Stability	±0.1 u/48 hours (constant temperature)
High-speed Scan Control	ASSP™: Advanced Scanning Speed Protocol
Scan Rate	20000 u/second (Q3 Scan)
Minimum Event Time	3 msec (maximum 333 scans/second)
Maximum Transitions	16 transitions/event
Maximum Events	2048 Events
Minimum Dwell Time	< 0.5 msec
Maximum MRM Speed	800 MRM transitions/second
Detector	Secondary electron multiplier with patented Overdrive Lens and conversion dynode 8 × 10 ⁶ dynamic range

Software

[GCMSsolution™ Ver. 4]

Operation Modes:	Q1 Scan, Q3 Scan, Product Ion scan, Precursor Ion scan, Neutral Loss scan, Q1 SIM, Q3 SIM, MRM, Scan/SIM and Scan/MRM FASST (simultaneous Scan/SIM measurements)
Energy Savings:	Ecology mode
Insert Replacement:	Easy sTop
Method Wizard:	Smart MRM/SIM* ³ (Automatic SIM, MRM table creation) AART (Automatic Adjustment of Retention Time)
Library Search:	Similarity searches using retention indices (Compatible with multiple retention index groups) Up to 10 libraries can be configured
Instrument Tuning:	Automatic (EI, CI, NCI)
Quality Control:	Accuracy control QA/QC function, instrument control system check function, user control security function
Measurement Data Control:	Optimal compound structure format for GLP
Maintenance Support:	MSNAVIGATOR
Report:	Flexible report creation, templates
Multisample Quantitation Assistance:	LabSolutions Insight™
Library (optional):	NIST, Wiley, FFNSC Library (Flavor and Fragrance)
Database (optional):	Smart Pesticides Database™ Smart Forensic Database™ Smart Metabolites Database™ Smart Environmental Database™
Semi-quantitative database (optional):	Quick-DB™ for residual pesticide analysis Quick-DB™ for forensic toxicological analysis Off-Flavor Analyzer
Composition Estimation (optional):	MassWorks

Demonstration of Performance

EI MRM IDL:

10 fg Octafluoronaphthalene m/z 272 → 222 IDL ≤ 4 fg

- IDL (Instrument Detection Limit) is statistically calculated from peak area repeatability of 8 times sequential analyses at 99% confidence level.
- Demonstration of Performance can be confirmed at installation upon request. IDL will be tested only with the auto injector.

Installation Checkout Criteria

EI Scan S/N:

1 pg Octafluoronaphthalene m/z 272 S/N ≥ 1500

EI MRM S/N:

100 fg Octafluoronaphthalene m/z 272 → 222 S/N ≥ 18000

CI MRM S/N:

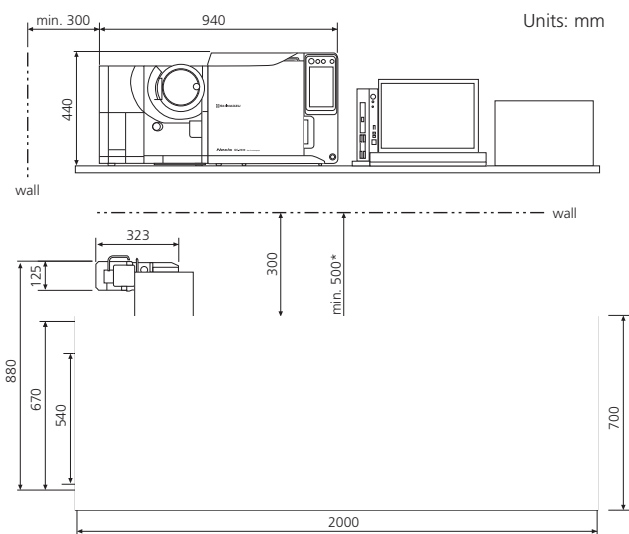
1 pg Benzophenone- d_{10} m/z 193 → 110 S/N ≥ 2000

NCI SIM S/N:

100 fg Octafluoronaphthalene m/z 272 S/N ≥ 4000

Typical Installation

Weight: GC-MS unit 110 kg and auxiliary pump 10 kg



*¹ Auto Injector AOC-20i Plus; FID as the detector; tetradecane (2.5 ng to the column) split injection.

*² 230V type.

*³ Smart SIM uses Excel®.

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First Edition: September 2018

Specification Sheet

GCMS-QP2020 NX

Gas Chromatograph Mass Spectrometer



GC/MS is now a standard analytical technique used in a variety of fields. With each new development, requests for more cost-effective systems and improvements in the work-life balance of users grow. Dedicated to improving efficiency, the GCMS-QP2020 NX can assist any laboratory, regardless of its analysis focus, achieve its full potential.

Gas Chromatograph

Model	Nexis™ GC-2030	Flow Control	Constant flow, constant pressure, constant liner velocity
Oven Temperature	Ambient +2 to 450 °C	Injection Port Temperature	450 °C maximum
Sample Injection Unit Temperature	450 °C maximum	AFC Pressure Range	1035 kPa maximum
Retention Time Repeatability	<0.0008min* ¹	Peak Area Repeatability	<1% RSD* ¹
		Oven Ramp Rate	Max 120 °C/min* ²

Mass Spectrometer

GCMS Interface

Type	Direct connection with capillary column
Temperature	50 °C to 350 °C

Ion Source

Type	Front access for easy maintenance
Ionization	EI (CI models are capable of CI, and NCI models are capable of CI and NCI.)
Filament	Dual, automatic switching
Electron Energy	10 to 200 eV
Electron Current	5 to 250 μ A

Mass Analyzer and Detector

Mass Analyzer	Metal quadrupole with pre-rod
Mass Range	m/z 1.5 to 1090
Possible setting of FWHM	0.4 to 2.0 u
Stability	$\pm$ 0.1 u/48 hours (constant temperature)
High-Speed Scan Control	ASSP™: Advanced Scanning Speed Protocol
High-Speed Scan Rate	20000 u/sec
Minimum Measurement Interval	0.01 s (100 scan/sec maximum)
Detector	Electron multiplier with low noise overdrive lens 8×10^6 (dynamic range)
Pump	190 L/sec / 170 L/sec (He) Turbomolecular pump differential exhaust system
Auxiliary Pump	30 L/min (60 Hz) oil rotary pump
Column Flow Rate	15 mL/min maximum (He)
Carrier Gas	Helium, hydrogen, nitrogen

DI Probe (Option)

Temperature	Room temperature to 500 °C
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Software

[GCMSsolution™ Ver. 4]

[LabSolutions™ DB GCMS][LabSolutions CS]

Measurement Mode: Scan, SIM, FASST (simultaneous Scan/SIM measurements)

SIM Channels: 64 channels × 128 groups

Energy Savings: Ecology mode

Insert Replacement: Easy sTop^{*3}

Method Wizard: Smart SIM^{TM*4}
(automatic SIM table creation)
AART
(Automatic Adjustment of Retention Time)

Library Search: Similarity searches using retention indices^{*3}
(Compatible with multiple retention index groups)
Up to 10 libraries can be configured

Instrument Tuning: Automatic (EI, CI, NCI)

Quality Control: Accuracy control QA/QC function,
instrument control system check function,
user control security function

Measurement Data Control: Optimal compound structure format for GLP

Maintenance Support: MSNAVIGATOR™

Report: Flexible report creation, templates

Multisample Quantitation

Assistance: LabSolutions Insight™

Library (option): NIST, Wiley, Pesticide Library, FFNSC Library (Flavor and Fragrance)^{*3}, Drug Library

Database (option): Method packages (EPA524, EPA525, residual pesticides in foods)
Smart Pesticides Database™
Smart Metabolites Database™
Smart Aroma Database™^{*3}
Forensic Toxicological Database^{*3}

Semi-quantitative database (option): Quick-DB™ for residual pesticide analysis
Off-Flavor Analyzer^{*3}
Simultaneous analysis database^{*3}

Composition Estimation (option): MassWorks^{*3}

^{*1} Auto Injector AOC™-20i Plus; FID as the detector; tetradecane (2.5 ng to the column) split injection.

^{*2} 230V type.

^{*3} Only available with GCMSsolution.

^{*4} Smart SIM uses Excel®.

Demonstration of Performance

EI Scan S/N:

1 pg Octafluoronaphthalene m/z 272 S/N ≥ 2000
(Helium carrier gas)
S/N ≥ 300
(Hydrogen carrier gas)

EI 20,000 u/sec Scan IDL:

1 pg Octafluoronaphthalene m/z 272 IDL ≤ 500 fg
(Helium carrier gas)

- IDL (Instrument Detection Limit) is statistically calculated from peak area repeatability of 8 times sequential analyses at 99% confidence level.
- Demonstration of Performance can be confirmed at installation upon request. IDL will be tested only with the auto injector.

Installation Checkout Criteria

(Helium carrier gas)

EI SIM IDL:

100 fg Octafluoronaphthalene m/z 272 IDL ≤ 10fg

CI Scan S/N:

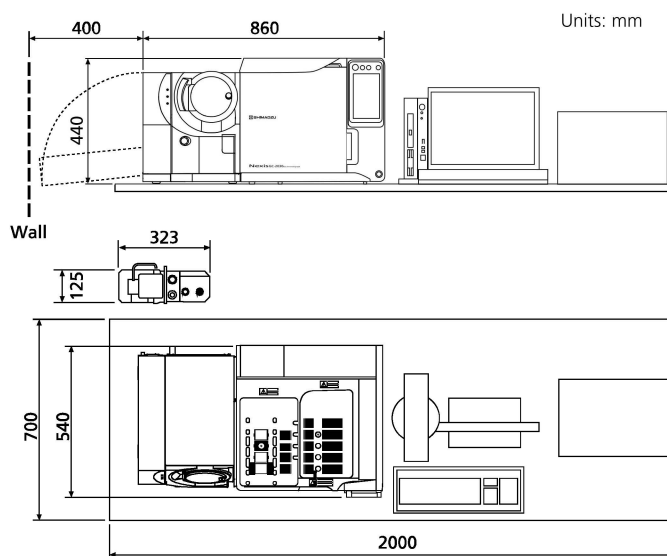
100 pg Benzophenone m/z 183 S/N ≥ 1200

NCI Scan S/N:

100 fg Octafluoronaphthalene m/z 272 S/N ≥ 1000

Typical Installation

Weight: GC-MS unit 85 kg and auxiliary pump 10 kg



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Gas Chromatograph Mass Spectrometer

GCMS-TQ8040 NX

UFMS
ULTRA FAST MASS SPECTROMETRY



Smart Performance That Boosts Routine Analytical Work

GCMS-TQ8040 NX

Smart Performance—Enabling highly sensitive simultaneous analysis of multiple components

Smart Productivity—Achieving superior productivity through dedication to efficiency

Smart Operation—Supporting easy creation of methods and data analysis

The fusion of these three Smart features makes this universal triple quadrupole GC-MS applicable in any field, where it is sure to deliver the utmost in performance.





GC-2030 TUNING

SHIMADZU

Nexis GC-2030

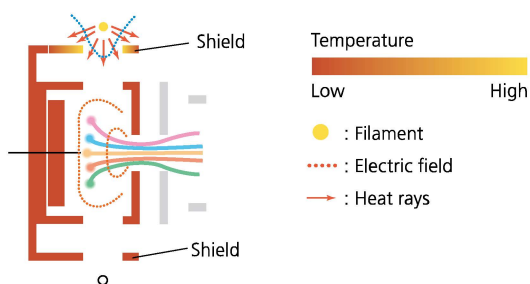


Smart Performance

Equipped with an ion source that features high sensitivity and long-term stability, and a high-efficiency collision cell, the system can provide sensitive, stable analyses over a long period of time. Also, since it incorporates the Nexis™ GC-2030, high-precision control over flowrate and temperature is assured, enabling the acquisition of highly reliable data.

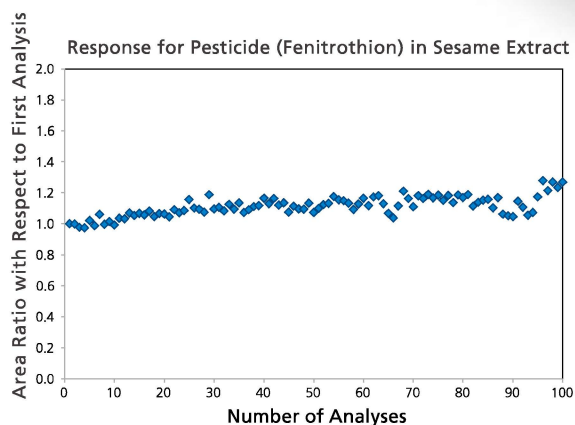
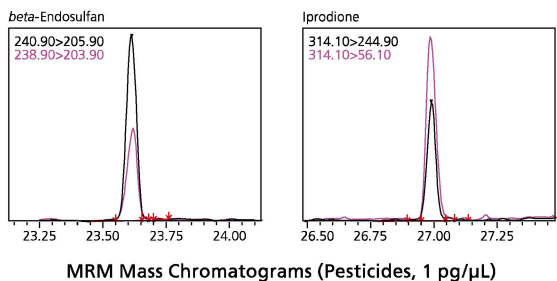
■ Highly Sensitive and Stable Ion Source

The effect of the filament's electric potential on the ion source is reduced by placing more distance between the filament and ion source box. In addition, a shield blocks out radiant heat generated from the filament to ensure the ion source box temperature remains uniform. Since this prevents any active spots within the ion source, it provides higher sensitivity for analysis. (Patent: US7939810)



■ High-Performance Quadrupole Mass Filter

The high-accuracy mass filter with pre-rods and patented electric field control technology achieves high-accuracy mass separation performance. Also, the pre-rods minimize quadrupole contamination and eliminate the need for quadrupole maintenance.



■ New Flow Controller Achieves Exceptional Reproducibility

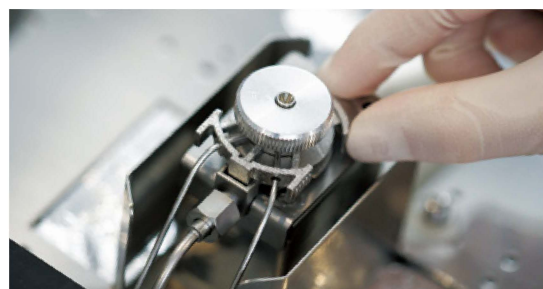
A new flow controller (AFC) with a CPU uses various control methods to control carrier gas flow to a constant flow speed, flowrate, or pressure. It can also accurately trace the analytical conditions already being used.

The split line filter can be replaced without any tools. Internal contamination can be confirmed visually, ensuring filters are replaced at the proper time.



■ One Touch Inlet Maintenance

The injection port can be opened or closed without tools by simply sliding the ClickTek™ lever. Replace the insert, slide the lever and feel the click for a leak-free install every time.

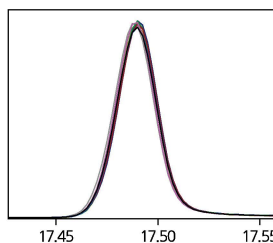


ClickTek Nut

■ Advanced GC Oven

The improved temperature control function enables more precise temperature control of the GC oven, which improves the precision of retention time reproducibility.

In addition, three oven cooling rate levels can be specified to minimize damage to column liquid phases and maximize the service life.



Mass Chromatogram of Benzo[a]pyrene
(Overlaid Plotting of Measurements Repeated Eight Times)

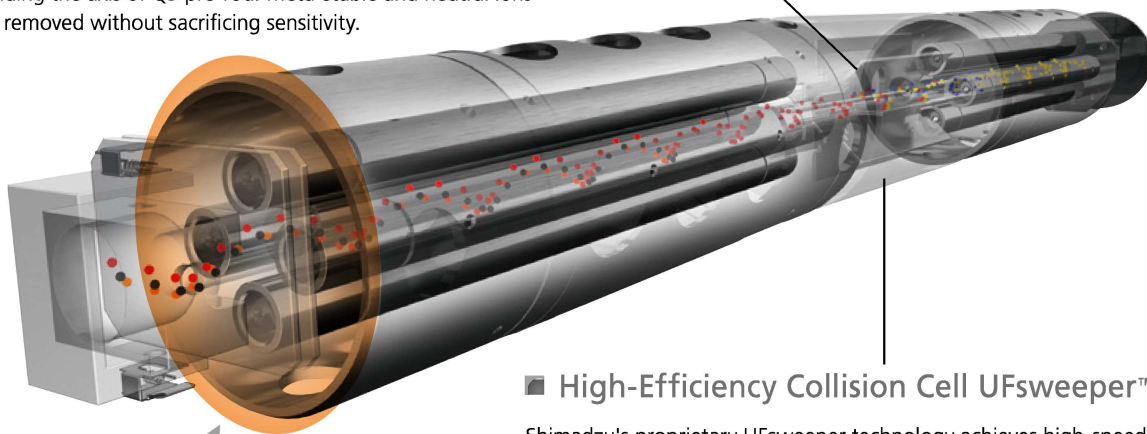
	Area value %RSD	Retention time %RSD
Acenaphthylene	0.969	0.005
Fluorene	0.918	0.007
Phenanthrene	1.075	0.006
Anthracene	1.141	0.007
Pyrene	1.263	0.004
Benzo[a]anthracene	1.405	0.005
Chrysene	1.283	0.005
Benzo[b]fluoranthene	1.940	0.003
Benzo[k]fluoranthene	1.268	0.003
Benzo[a]pyrene	0.781	0.005
Indeno[1,2,3-cd]pyrene	0.744	0.004
Dibenz[a,h]anthracene	0.836	0.004
Benzo[ghi]perylene	0.767	0.004

Repeatability with Polycyclic
Aromatic Hydrocarbons (PAHs)

Technology That Makes Possible the Simultaneous Analysis of Several Hundred Components

■ OFF-AXIS Ion Optics

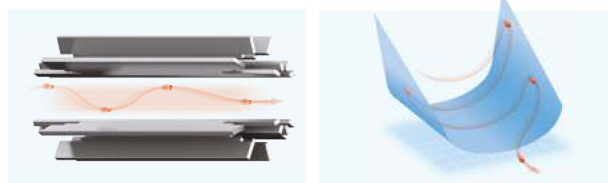
Lower detection limits are achieved by collision cell and OFF-AXIS Ion Optics, a patent technology, which is capable of bending the axis of Q3 pre-rod. Meta-stable and neutral ions are removed without sacrificing sensitivity.



Pre-rods prevent quadrupole contamination even with samples containing many matrices.

■ High-Efficiency Collision Cell UFsweeper™

Shimadzu's proprietary UFsweeper technology achieves high-speed MRM analysis at speeds up to 800 transitions per second. It sweeps residual ions from the collision cell to provide high-efficiency CID and fast ion transport. Rapid ion removal minimizes cross-talk and enables trace analysis.



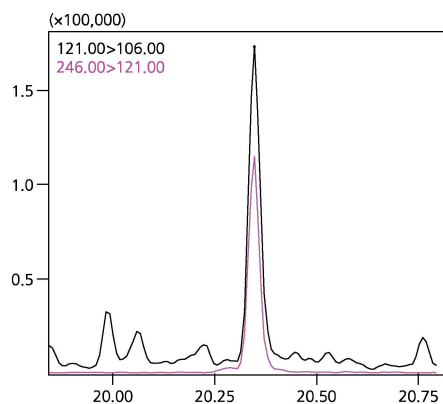
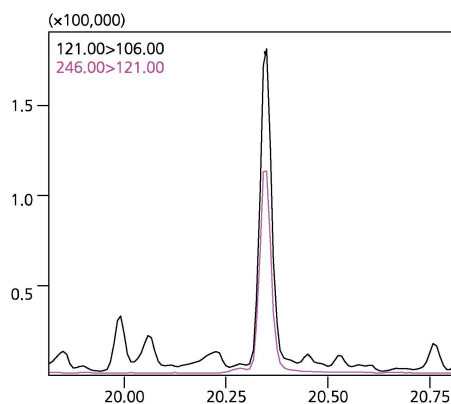
UFsweeper

■ Automatic Method Creation



Smart MRM

Smart MRM™ is a function that sets the optimal measurement time for each component, and automatically creates a method. Since only the data during the elution times of the targeted components is acquired, even when simultaneously analyzing several hundred components, detection occurs without any loss in sensitivity, even with trace concentrations.

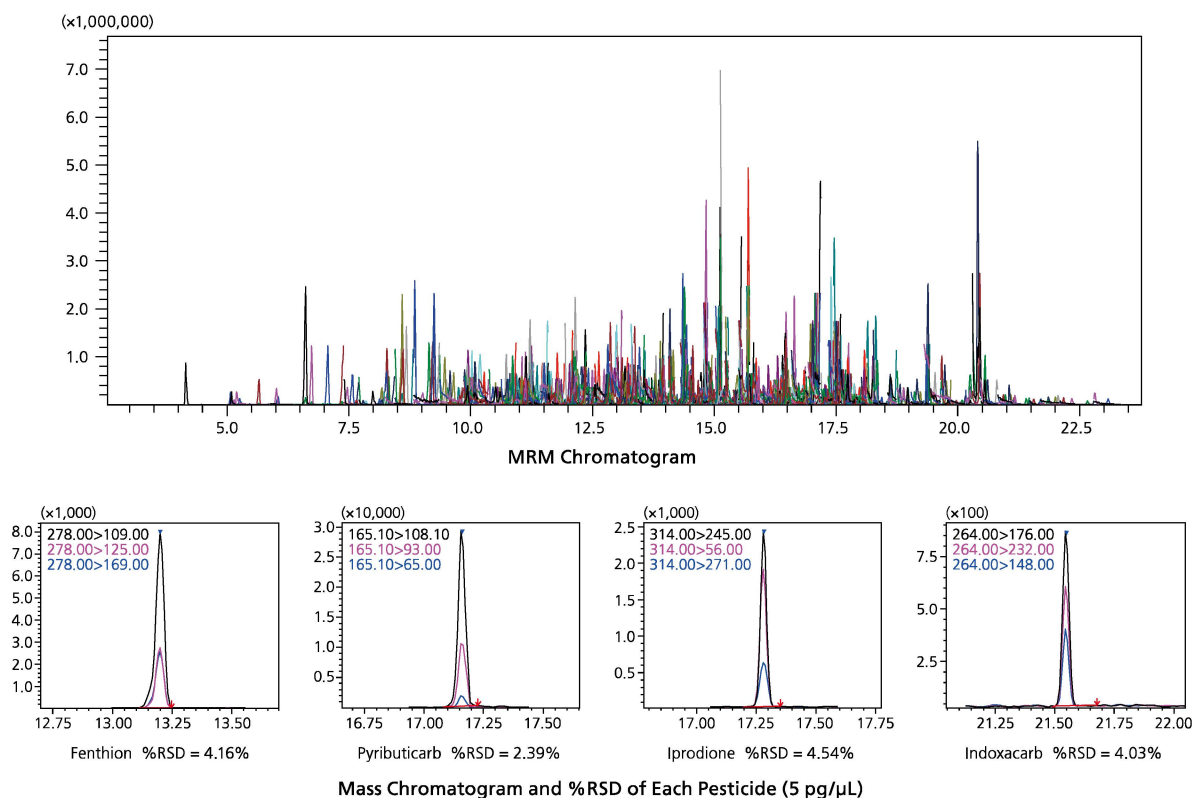


Method for the Simultaneous Analysis of 20 Components
Dwell Time: 32 msec

Method for the Simultaneous Analysis of 400 Components
Dwell Time: 2.7 msec

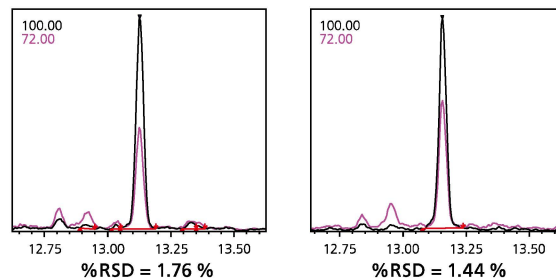
Analysis of Pharmaceutical in Blood Plasma (Nefiracetam)

Simultaneous Analysis of 439 Pesticides

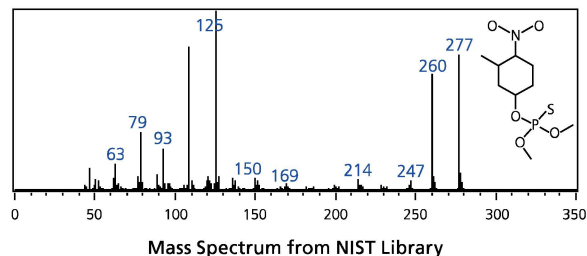
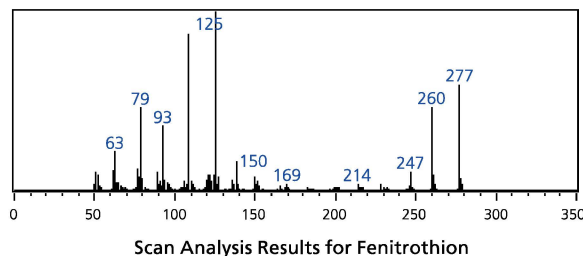


High-Sensitivity Analysis by Single GC-MS Mode

Due to a highly sensitive ion source and highly sensitive detector with overdrive lenses, the GCMS-TQ8040 NX is able to select and detect generated ions efficiently. That achieves high sensitivity not only for MRM measurements in the GC-MS/MS mode, but also for scan and SIM measurements in the GC/MS mode. In addition, pre-rods help prevent quadrupole contamination, so that stable sensitivity and mass spectra can be obtained even when samples containing many matrices are analyzed.



5 pg/mL Thiobencarb
Left: GCMS-QP2020 NX, Right: GCMS-TQ8040 NX
Reproducibility for n = 5



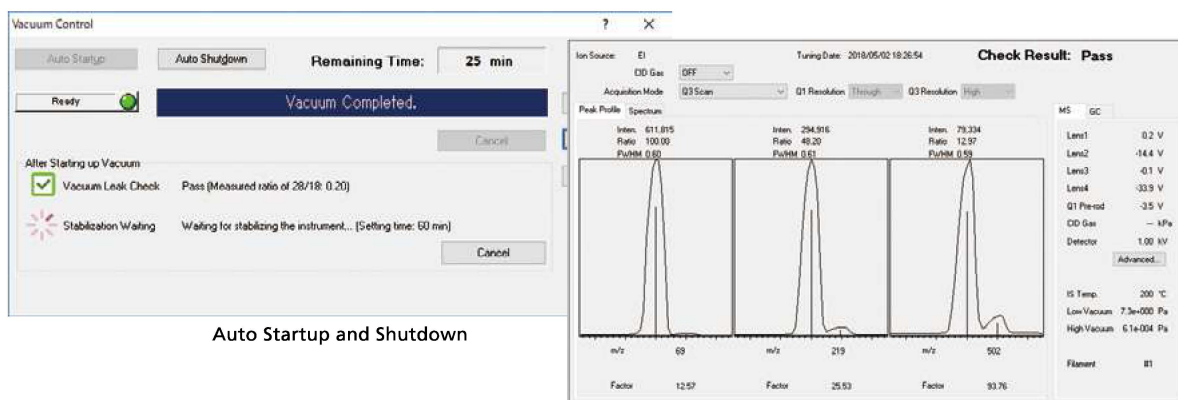
Smart Productivity

The GC/MS is now a standard system for analysts, and a system can be used for a wide variety of applications. The active time management feature appropriately manages times when the system requires maintenance, or when system changes are being made, or the waiting time for a user when multiple users are waiting to use the system. This ensures more efficient use of the system and greater uptime.

■ Active-Time Management™ That Accurately Determines Operation Time

Time Management during Instrument Startup/Shutdown

The mass spectrometer has to be operated in a vacuum condition, the startup and stopping of the system takes time depending on the condition. Determining this can be a challenge. Since the amount of time that the system takes when starting up or stopping is displayed in real time, it is easy to accurately determine when maintenance of the ion source or analysis is possible. Moreover, tasks that until now needed to be performed by the user, such as leak checks upon system startup and auto tuning, are now performed automatically.



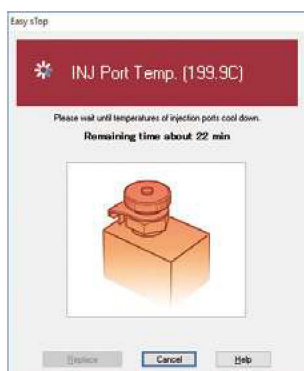
Auto Startup and Shutdown

Auto Tuning Check Result

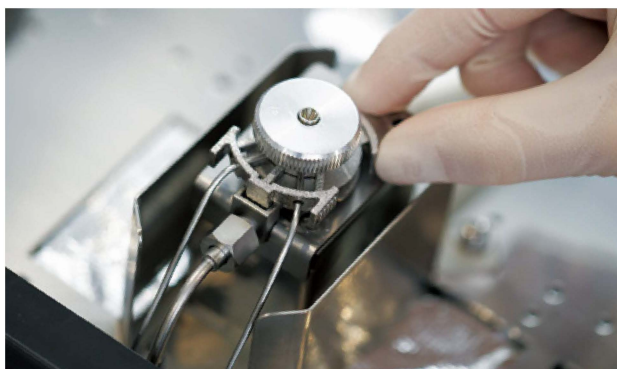
Time Management during Injection Port Maintenance

The Easy sTop function, used to safely maintain the sample injection port without releasing the vacuum, displays the remaining time (cooling-down time) when the septum or the insert can be replaced in real time. Maintenance time can be minimized by understanding the accurate remaining time.

Furthermore, by using a ClickTek nut on the top of the sample injection port, the port can be opened or closed without tools, by simply using fingers to twist a lever. That enables faster and easier insert replacement than ever before.



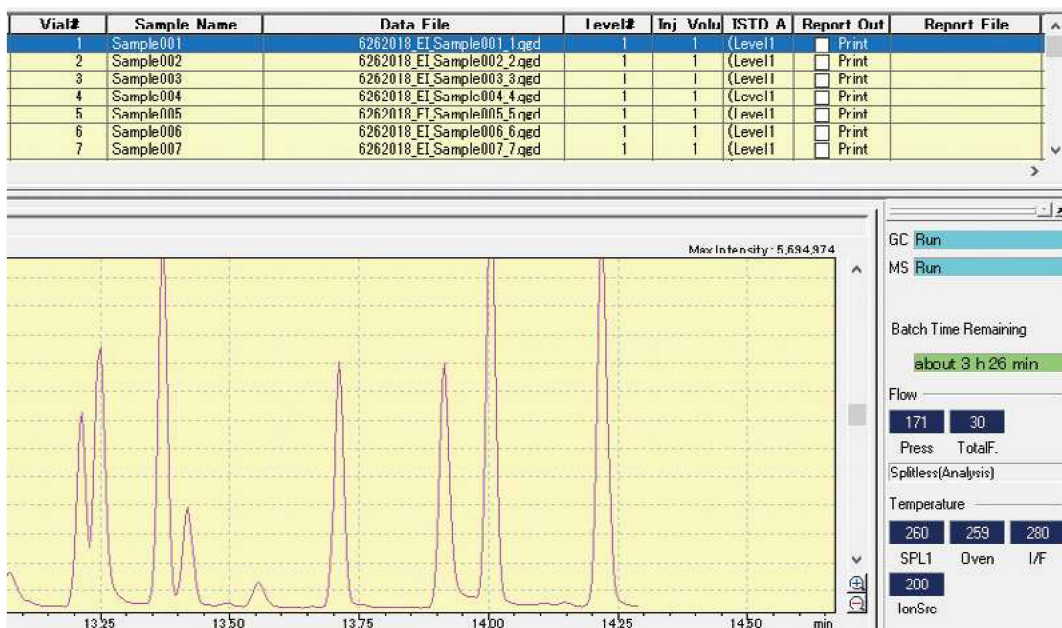
Easy sTop Function



ClickTek Nut

Time Management for Continuous Analysis

By displaying the time required for continuous analysis in real time, the time when the current continuous analysis will finish can be accurately confirmed. This increases the instrument operating time (active time) by reducing standby time required during continuous analysis or while switching between different users. In addition, because this function makes it easier to schedule the timing for analysis preparations, such as sample preparation and pretreatment, based on the finish time of the previous analysis, it enables analytical processes to be performed more efficiently, which can help improve work-life balance.

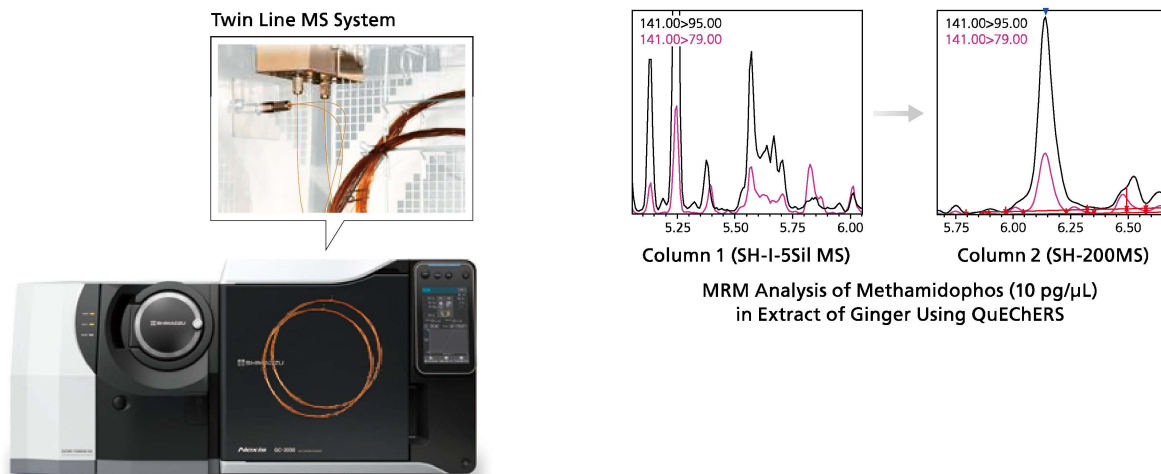


Time display for continuous analysis can be used only in liquid injection using AOC-20i.

Simple Column Replacement Using the Twin Line MS System

By connecting the outlet ends of two different columns to the MS at the same, different application data can be acquired without shutting OFF the MS vacuum.

CID gas control is a method parameter, allowing acquisition of GC-MS and GC-MS/MS data in the same batch.



Smart Operation

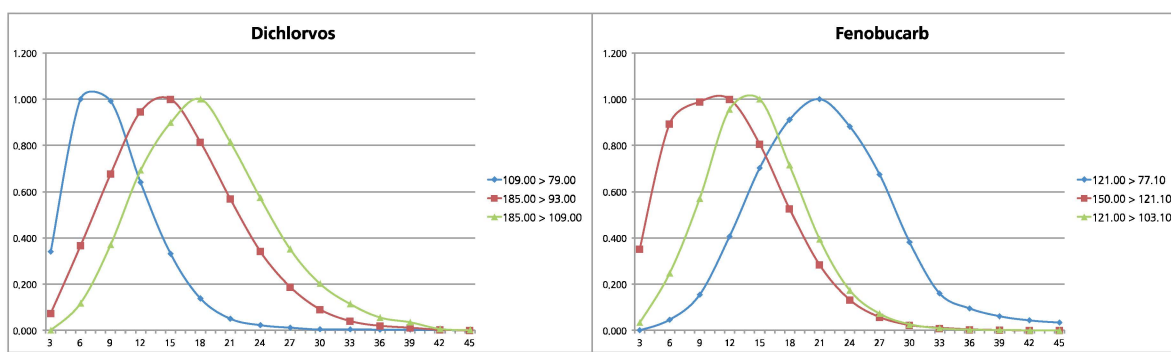
Creating an MRM analysis method requires determining the optimum transitions, collision energies, and other complicated parameters. Smart MRM, the method creation function, creates optimized analytical methods by using the transitions data in the “Smart Database” file. When you want to perform MRM measurements of components not contained in the database, the optimal transitions can be automatically searched for using the MRM Optimization Tool.

MRM Optimization Tool

■ Optimize MRM Transitions Automatically

Determining and optimizing MRM transitions for new compounds can require significant development time. The “MRM Optimization Tool” automates the process by collecting product ion scan data and finding the optimum collision energy for each transition.

Once established, the transitions are registered to one of the Shimadzu “Smart Database” files, and the MRM or Scan/MRM methods are created using **Smart MRM**.



Smart Database™

■ Method Management Achieved by Database File

The Shimadzu “Smart Database” is a database file for creating the method files using “Smart MRM” function. In addition to compound information and transitions, retention index can be registered in the database file. Method creation can be proceeded without calculating the retention time by analyzing the standard samples when using the Automatic Adjustment Retention Time (AART) function. In addition to MRM information, Scan and SIM ion information, mass spectra and calibration curve information from the internal standard method can also be registered in the database file. This allows users to create their own database easily.

Serial#	Type	Acq. Mode	ISTD Group	Level1 Conc (IS)	Method No.	Compound Name (E)	Ret. Index 1	Cas#	Ion1			
							Method1		Type	m/z	CE	Ratio
1	Target	MRM			1	Aldicarb deg.	881	0 - 00 - 0	T	115.1>68.0	8	100.00
2	Target	MRM			1	DCIP	1058	108 - 60 - 1	T	121.1>45.0	4	100.00
3	Target	MRM			1	Aldoxycarb deg.	1135	0 - 00 - 0	T	80.0>65.0	6	100.00
4	Target	MRM			1	Chlorfentezine deg.	1182	0 - 00 - 0	T	137.0>102.0	14	100.00
5	Target	MRM			1	Hymexazol	1196	10004 - 44 - 1	T	99.0>71.0	8	100.00
6	Target	MRM			1	Methamidophos	1236	10265 - 92 - 6	T	141.0>95.0	8	100.00
7	Target	MRM			1	Dichlorvos	1253	62 - 73 - 7	T	109.0>79.0	8	100.00
8	Target	MRM			1	Nereistoxin	1283	0 - 00 - 0	T	148.1>71.1	8	100.00
9	Target	MRM			1	Allidochlor	1296	93 - 71 - 0	T	132.1>56.0	8	100.00
10	Target	MRM			1	Dichlobenil	1358	1194 - 65 - 6	T	170.9>136.0	14	100.00
11	Target	MRM			1	EPTC	1364	759 - 94 - 4	T	169.1>126.1	4	100.00
12	Target	MRM			1	Biphenyl	1394	92 - 52 - 4	T	154.1>126.1	22	100.00
13	Target	MRM			1	Propamocarb	1398	24579 - 73 - 5	T	188.2>72.0	4	100.00

Smart MRM

Automatic Method Creation



The Smart MRM technology automatically creates methods with measurement times optimized for each component based on the Smart database. The Automatic Adjustment of Retention Time (AART) function incorporated in the system estimates retention times with high accuracy. When creating methods for simultaneous multicomponent analysis, the complicated process of configuring measurement parameters made it difficult to prepare appropriate methods. By using the Smart MRM function, however, it is possible to automatically create methods in which data are acquired with high sensitivity only during the elution time of the target components. In addition to MRM methods, SIM methods can be created.

The screenshot displays the 'Create Method File' window with various parameters set for an MRM method. Below this, a table lists the MRM transitions for various compounds. To the right, the 'MS Table Parameter' dialog box is shown, allowing for the configuration of MRM/SIM parameters such as Loop Time, Required Processing Time, Scan Mode, and Scan Parameters.

Seq#	Type	Acq. Mode	RT Group	Level Control	Method No.	Compound Name (E)	Ret. Index 1	Ret. Index 2	Ret. Index 3	Ret. Time	Capd	Type	m/z	CE	Int	
1	Target	MRM			1	Albuterol	891									
2	Target	MRM			1	Albuterol	891	1079	1080	0-100-0		T	115.1	88.0	8	1
3	Target	MRM			1	Albuterol	1135	1142	1141	0-100-0		T	121.1	112.0	8	1
4	Target	MRM			1	Chlorpheniramine	1192	1188	1193	0-100-0		T	137.0	132.0	14	1
5	Target	MRM			1	Hydroxyzine	1196	1202	1199	1000-44-1		T	95.0	97.0	8	1
6	Target	MRM			1	Metaxalone	1258	1258	1254	1000-62-8		T	141.0	145.0	8	1
7	Target	MRM			1	Dichlorvos	1263	1268	1264	62-73-7		T	139.0	139.0	8	1
8	Target	MRM			1	Nerisatin	1283	1287	1275	0-100-0		T	159.1	171.1	8	1
9	Target	MRM			1	Acetaminophen	1296	1300	1294	60-11-9		T	152.0	156.0	8	1
10	Target	MRM			1	Demeton	1363	1361	1363	1194-45-8		T	170.0	176.0	14	1

Parameter Setting

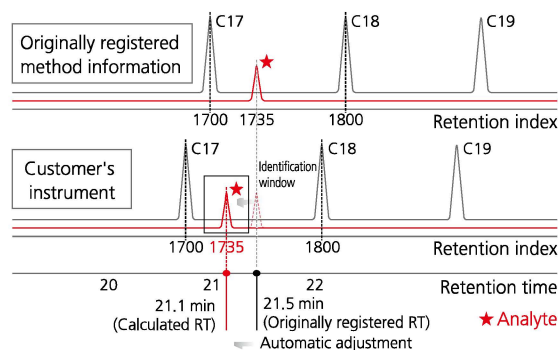
Automatic Adjustment of Compound Retention Time (AART) (Automatic Adjustment of Retention Time)

Compound Name (E)	Ret. Time
Pirimphos ethyl	23.286
Isopropalin	23.415
Isodrin	23.436
Cyprodinil	23.458
Isotefenphos-methyl	23.500
MGK 264-2	23.565
(E)-Chlorfenvinphos	23.629
Dimethametryn	23.715
Metazachlor	23.737
Pendimethalin	23.760
Ethionazole	23.801
Penconazole	23.844
Heptachlor-epoxide	23.887
oxy-Chlordane	23.930
Chlorzinat	23.952
(Z)-Pyriphenox	23.992
Thiabenzazole	23.973
Allethrin-1,2	23.995
Phosfolan	24.016

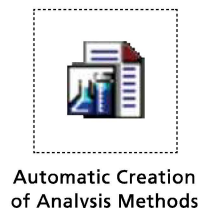
Automatic Estimation of Retention Times

200 : Pirimphos ethyl (3.3 ms)	201 : Isopropalin (3.3 ms)
202 : Isodrin (3.3 ms)	203 : Cyprodinil (3.3 ms)
204 : Isotefenphos-methyl (3.5 ms)	205 : MGK 264-2 (3.3 ms)
206 : (E)-Chlorfenvinphos (3.3 ms)	207 : Dimethametryn (2.7 ms)
208 : Metazachlor (2.7 ms)	209 : Pendimethalin (2.7 ms)
210 : Ethionazole (2.7 ms)	211 : Anrazone (2.5 ms)
212 : Penconazole (2.7 ms)	213 : Heptachlor-epoxide (2.7 ms)
214 : oxy-Chlordane (2.7 ms)	215 : Chlorzinat (2.7 ms)
216 : (Z)-Pyriphenox (2.7 ms)	217 : Thiabenzazole (2.7 ms)
218 : Allethrin-1,2 (2.7 ms)	219 : Phosfolan (2.5 ms)
220 : Tolyfluand (2.7 ms)	221 : Heptachlor-endo-epoxide (2.7 ms)
222 : Bromfenvinphos-methyl (2.7 ms)	

Dwell Time Optimization



The AART function adjusts the retention times of target components based on linear retention indices (LRI) and the retention times of n-alkanes. The AART function easily adjusts acquisition and processing method parameters simultaneously.



Automatic Creation of Analysis Methods

Compound Name	Acq. Mode	Event Time(sec)	Ch1 m/z	Ch1 CE	Ch2 m/z	Ch2 CE	Ch3 m/z	Ch3 CE
44-14 MGK 264-2	MRM	0.018	164.10>98.00	12.00	111.10>82.00	8.00	164.10>67.00	6.00
44-15 (E)-Chlorfenvinphos	MRM	0.018	323.00>267.00	16.00	267.00>159.00	18.00	267.00>203.00	12.00
44-16 Dimethametryn	MRM	0.018	212.10>122.10	12.00	212.10>94.00	22.00	212.10>71.00	18.00
44-17 Metazachlor	MRM	0.018	209.10>132.10	18.00	133.10>117.10	24.00	211.10>132.10	20.00
45-1 Difenamid	MRM	0.014	167.10>152.10	20.00	238.10>167.10	8.00	238.10>72.00	16.00
45-2 Forthazate-2	MRM	0.014	195.00>103.00	10.00	195.00>60.00	22.00	195.00>139.00	6.00
45-3 Pirimphos ethyl	MRM	0.014	304.10>168.10	12.00	318.10>166.10	12.00	318.10>182.10	12.00
45-4 Isopropalin	MRM	0.014	280.10>298.10	8.00	280.10>183.10	18.00	280.10>165.10	16.00
45-5 Isodrin	MRM	0.014	192.90>157.00	20.00	192.90>123.00	26.00	262.90>192.90	28.00
45-6 Cyprodinil	MRM	0.014	224.10>208.10	16.00	224.10>187.10	22.00	224.10>131.10	14.00
45-7 Isotefenphos-methyl	MRM	0.010	199.00>121.00	14.00	241.10>121.10	22.00	0.00>0.00	0.00
45-8 MGK 264-2	MRM	0.014	164.10>98.00	12.00	111.10>82.00	8.00	164.10>67.00	6.00
45-9 (E)-Chlorfenvinphos	MRM	0.014	323.00>267.00	16.00	267.00>159.00	18.00	267.00>203.00	12.00
45-10 Dimethametryn	MRM	0.014	212.10>122.10	12.00	212.10>94.00	22.00	212.10>71.00	18.00

Multianalyte Data Analysis with More Efficiency Using LabSolutions Insight™

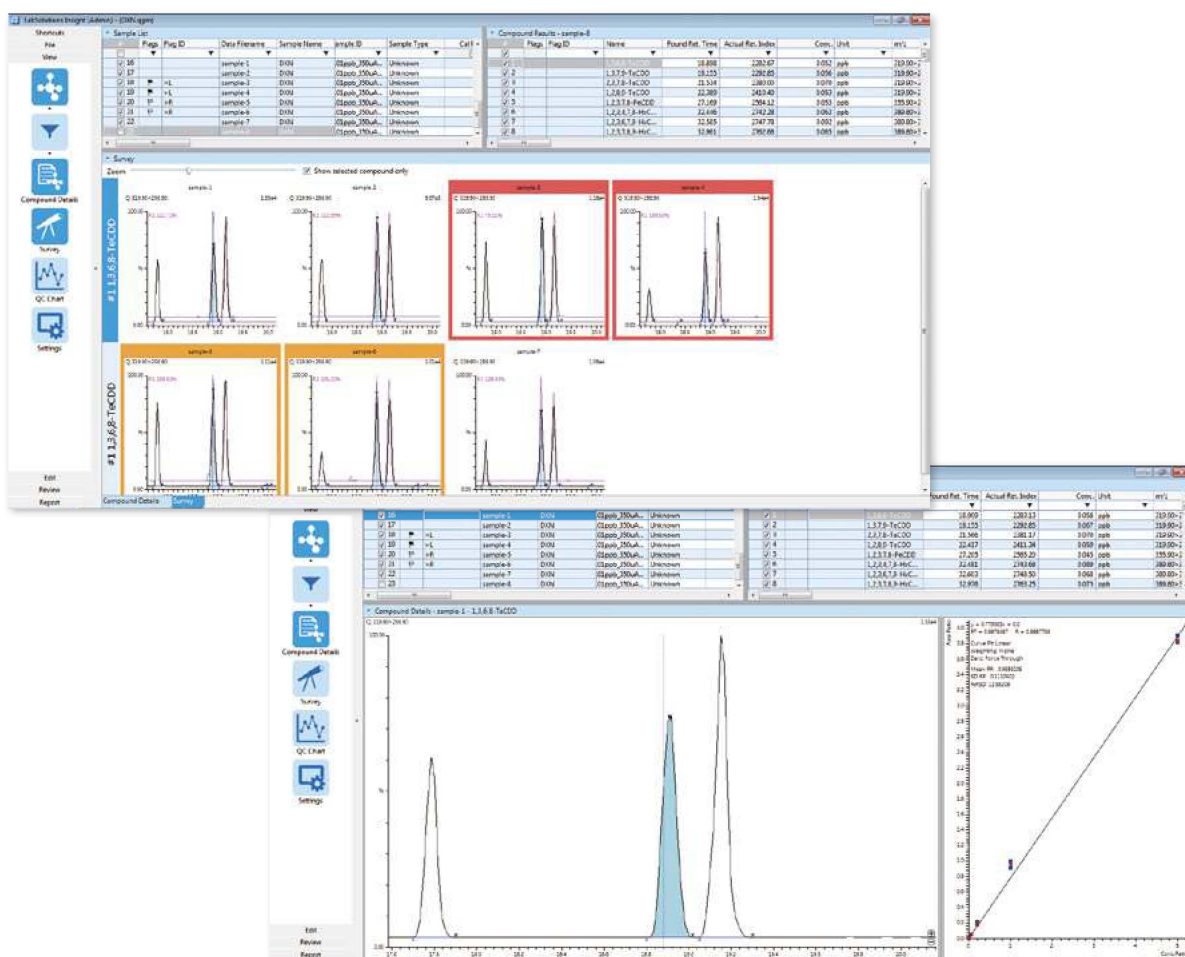
LabSolutions Insight quantitative analysis support software includes functionality for enhancing the throughput of multianalyte data analysis, making it especially helpful for routine analysis. Quantitative results for a series of data sets can be displayed at the same time for data analysis. Chromatograms for each set of sample data can be displayed side-by-side for each compound, making it easy to confirm peak detection and quantitative results. Color-coded flagging functionality makes it easy to quickly see peaks from any of multiple analytes that exceed criteria values. That drastically decreases the number of peaks that need to be checked and improves the efficiency of quantitative analysis processes.

■ More Efficient Multianalyte Data Analysis

Users can select the optimal method for displaying data based on their workflow. For example, data analysis windows can be displayed for each target compound or each set of measurement data, or quantitation or area values can be displayed as a list. If necessary, quantitative analysis can be repeated with peaks directly corrected, which provides intuitive operability.

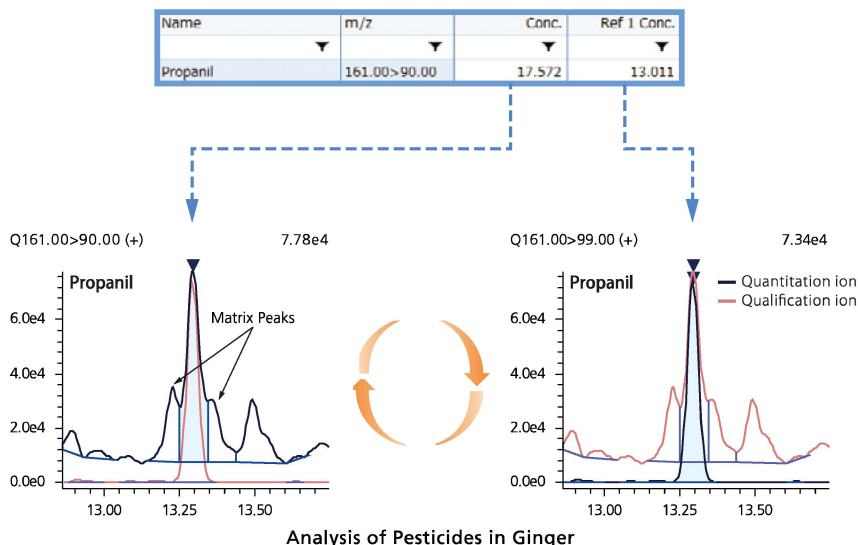
■ Visualization of Quantitative and Accuracy Control Results

Quantitative and accuracy control results can be presented more clearly by using the flagging function to color-code result values that exceed specified criteria values or by only displaying flagged results. Five levels of criteria values can be indicated for quantitative results, making it easy to confirm the corresponding criteria value range for the detected compounds. Flagging immediately reflects results from any corrections made to manual peak integration or calibration curves.



■ Easy Control of Quantitation and Reference Ions

Analysts can update retention times and reference ion ratios quickly and easily from a single standard or a group of standards. It is also easy to reassign quantitation ions as needed for method development purposes or because of unexpected matrix interferences.



■ Status Review Function

This function can be used to specify the status of all compounds and samples for their management. By specifying a status, the progress of data analysis work can be accurately recorded and reported.

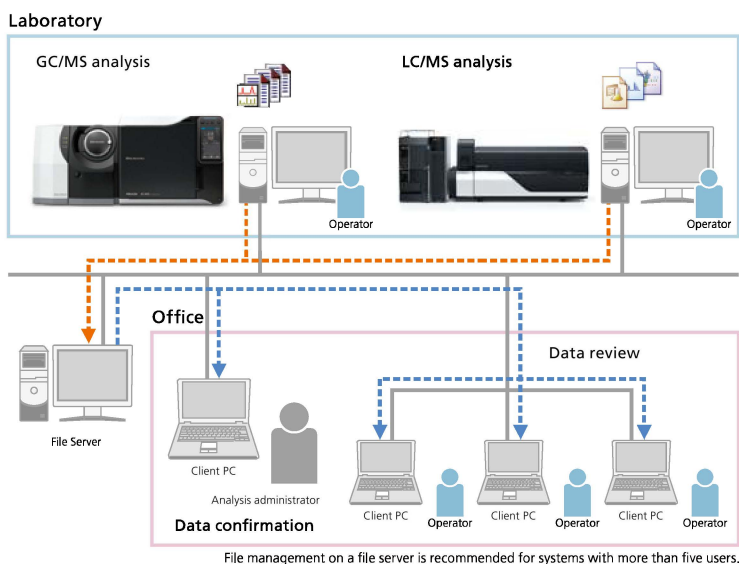
#	Flags	Data Filename	Status	Sample Type	#	Name	Status
7		Conc-3_001	Pending	Standard	1	MPA-gluc	Pending
8		Conc-3_002	Accept	Standard	2	d3-MPA...	Pending
9		Conc-3_003	Review	Standard	3	MPA	Pending
10		Unknown-1	Rerun	Unknown	4	d3-MPA	Pending

Rerun

Pending Accept

■ Network Support

Data acquired from multiple systems can be reviewed or confirmed using client computers connected via a LAN or other network. If multiple systems are used, data obtained from each system can be reviewed from any client computer. Even in the case of multiple analysts using the same system, the ability to separate analytical work from measurement work improves efficiency.



Smart Database Series Enables Accurate Analysis Using MRM

GC-MS/MS database series specialized for various fields supports your analysis with ease and accuracy. These databases contain pre-optimized MRM transitions and collision energies required for GC-MS/MS analysis, allowing users to start an analysis immediately just by using the AART function to automatically modify the retention times.

● Smart Pesticides Database™

It covers the pesticides (530 compounds) subject to GC-MS analysis and used inside and outside Japan. The database also contains information on compounds that can be used as internal standards. Therefore, it also supports analysis with the internal standard method.



● Smart Metabolites Database™

The database contains 627 compounds including metabolites contained in food, blood, urine and cells. It also contains information on the stable isotopes of 38 major metabolites, which can be used as internal standards.



● Smart Aroma Database™

511 compounds that contribute to aroma are registered in the database. This database supports various aroma analysis, such as detecting aroma compounds from scan measurements and high-sensitivity target analysis using MRM and SIM.



● Smart Forensic Database™

The database is registered with 486 forensic toxicological substances often involved in poisonings, such as drugs of abuse, psychotropic drugs, pharmaceuticals, and pesticides.



● Smart Environmental Database™

The database contains information on 527 compounds including polychlorinated biphenyl, brominated flame retardants, dioxins, polycyclic aromatic hydrocarbons, and organochlorine pesticides, as well as their stable isotope labeled compounds.



Quick-DB™ Series Enables Quick Screening Without Using Standards

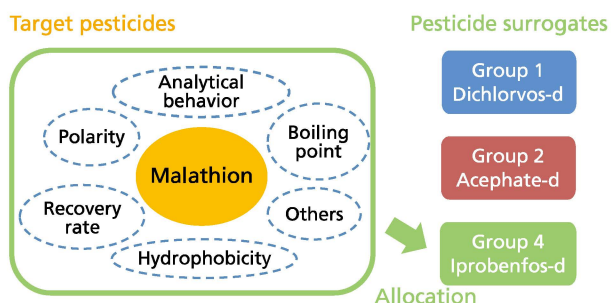
Preregistered with calibration curve information from the internal standard methods, this database allows users to calculate quantitative values without analyzing standard samples. It can be used for screening when quick confirmation of quantitative results is required.

● Quick-DB GC/MS Residual Pesticides Database

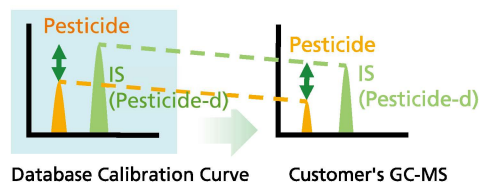
The database contains information on calibration curves created using pesticide surrogates as the internal standards, thus enabling the simultaneous screening of 491 residual pesticides without using standard samples. The registered calibration curves have been created by grouping target pesticides based on similar behavioral and physical properties, and allocating pesticide surrogates with similar physical properties to each group as internal standard substances. This allows highly accurate quantitative values to be calculated.

Allocation of Pesticide Surrogates

Based on Physical Properties of Target Pesticides



Sensitivity Variation Adjustments Using Pesticide Surrogates



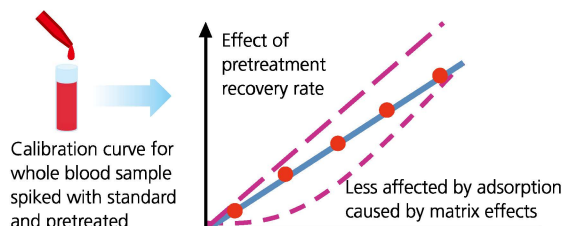
Pesticide surrogates can also be used to adjust differences in target pesticide responses observed in calibration curves and a customer's instrument due to variations in GC-MS(MS) sensitivity.

● Quick-DB Forensic Toxicology Database

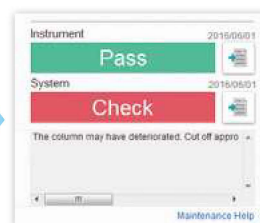
This database contains information on sample preparation, data acquisition, and analysis of 68 compounds often involved in poisonings. Due to the simple QuEChERS method used for the sample preparation, even first-time users can pretreat samples easily. The performance control function, which automatically assesses the system status, quickly determines problematic areas. As a result, users can analyze toxicological substances while consistently maintaining the highest status level.

Using a Calibration Curve for a Pretreated Sample to Correct for Recovery Rates

By using the calibration curve information from a pretreated sample, accurate quantitative values can be obtained. The calibration curve information is used to correct differences in recovery rates for each target compound or correct for effects caused by adsorption, which occurs when creating calibration curves using standards.



If specific control parameter criteria are not satisfied, the optimal steps for restoring the system status are displayed in a message box.



Quick-DB Forensic Launcher Screen

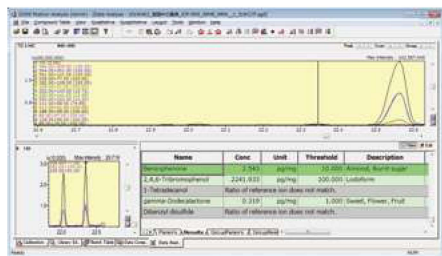
● Off-Flavor Analyzer

This analysis system contains information on the major odor-causing substances identified from previous problems and associated sensory information, thus enabling the reliable identification of odor-causing substances. It allows users to calculate quantitative values easily without using standard samples, and to identify odor-causing substances through comparison with registered odor thresholds. The system also supports the use of a sniffer, enabling the efficient confirmation of odors using the predicted retention time display function. In addition, support is provided for a total system, including pretreatment units such as HS, SPME, and thermal desorption units using MonoTrap™.

Compound Name (S)	Ret. Index (I)	Comment (S)	Threshold
Benzophenone	2470	Almond, Burnt sugar	10
2,4,6-Tribromophenol	2000	Leakage	100
1-Tribromophenol	2100	Coconut	1000
gamma-Dodecalactone	2360	Pearl, Flower, Fruit	1
Octyl alcohol	2000	Flavor	1

Primary odor components GC/MS analytical conditions Sensory information

Comparison of Concentration to Odor Threshold Values



Odor-causing substances can be identified through comparisons of odor thresholds with the concentrations of off-flavor components identified in a chromatogram.

Name	Conc	Unit	Threshold	Description
Benzophenone	2.543	pg/mg	10.000	Almond, Burnt sugar
2,4,6-Tribromophenol	2241.933	pg/mg	100.000	Leakage

Under Threshold Value

Benzophenone

Concentration/Threshold=Odor threshold value
2.543/10.000=0.254

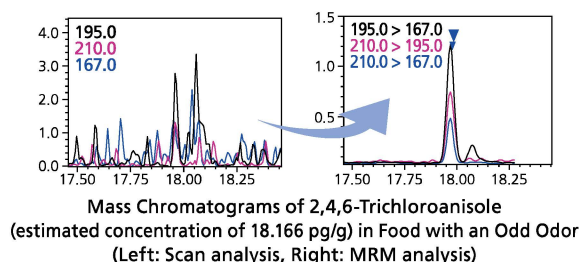
Over Threshold Value

2,4,6-Tribromophenol

Concentration/Threshold=Odor threshold value
2241.933/100.000=22.419



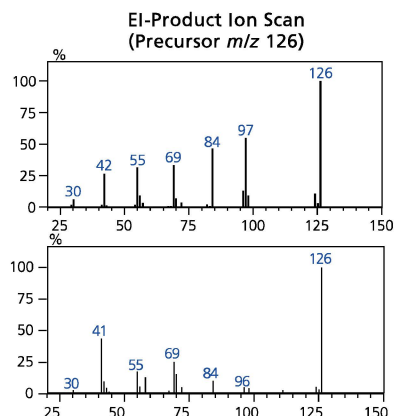
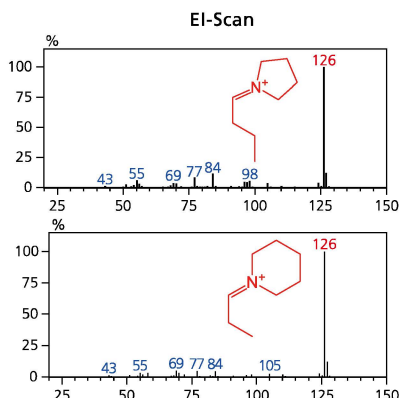
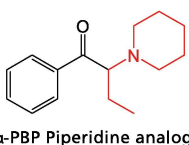
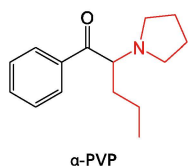
Since some odor components have a low odor threshold, low concentration levels need to be detected to identify the causative substances. High-sensitivity MRM/SIM analysis by GC-MS/MS can reliably detect even trace components near the odor threshold (a few pg/g).



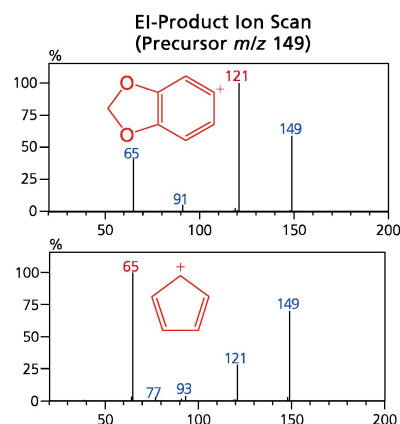
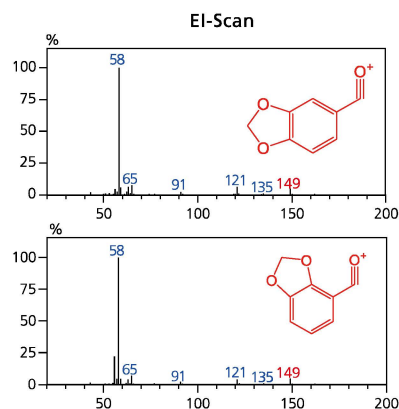
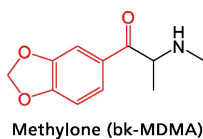
Qualitative Analysis Using GC-MS/MS

GC-MS/MS allows users to freely select ions cleaved by electron ionization (EI), and then cleave precursor ions via collision induced dissociation (CID), thus enabling the detailed analysis of partial structures. A product ion scan can be used to easily discriminate structural isomers and regioisomers, which are hard to identify with an EI mass spectrum obtained via GC/MS. This mode is optimal for predicting partial structures.

Example of Structural Isomers

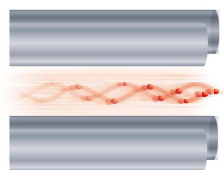


Example of Regioisomers

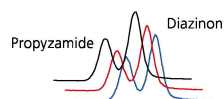


High-Speed Scan Control Technology

Advanced Scanning Speed Protocol (ASSP™)



Newly Patented Technology (ASSP)



Black: 1,111 u/sec
Red: 5,000 u/sec
Blue: 10,000 u/sec

Equipped with a function to automatically optimize the rod bias voltage during high-speed data acquisition, the system can collect data stably through scans as well as product ion scans at 20,000 u/sec (patent: US6610979).

With the GCMS-TQ8040 NX, ten or more product ion scans can be configured for a single measurement, and three or more user-specified analysis modes (Scan, MRM, product ion scan) can be combined.

	Compound Name	Start Time (min)	End Time (min)	Acq. Mode	Event Time(sec)	Scan Speed	Start m/z	End m/z	Precursor m/z	CE
I-1		2.30	43.00	Q3 Scan	0.050	10000	43.00	500.00		
I-2		2.30	43.00	MRM	0.050					
I-3	Amine m/z 44	2.30	43.00	Product Ion Scan	0.005	20000	20.00	45.00	44.00	15.00
I-4	Amine m/z 58	2.30	43.00	Product Ion Scan	0.005	20000	20.00	59.00	58.00	15.00
I-5	Amine m/z 72	2.30	43.00	Product Ion Scan	0.008	20000	20.00	73.00	72.00	15.00
I-6	Amine m/z 96	2.30	43.00	Product Ion Scan	0.008	20000	20.00	97.00	96.00	15.00
I-7	Amine m/z 98	2.30	43.00	Product Ion Scan	0.010	20000	20.00	99.00	98.00	15.00
I-8	Amine m/z 100	2.30	43.00	Product Ion Scan	0.010	20000	20.00	101.00	100.00	15.00
I-9	Amine m/z 112	2.30	43.00	Product Ion Scan	0.010	20000	20.00	113.00	112.00	15.00
I-10	Amine m/z 114	2.30	43.00	Product Ion Scan	0.010	20000	20.00	115.00	114.00	15.00
I-11	Amine m/z 126	2.30	43.00	Product Ion Scan	0.010	20000	20.00	127.00	126.00	15.00
I-12	Amine m/z 128	2.30	43.00	Product Ion Scan	0.010	20000	20.00	129.00	128.00	15.00
I-13	Amine m/z 140	2.30	43.00	Product Ion Scan	0.010	20000	20.00	141.00	140.00	15.00
I-14	Amine m/z 142	2.30	43.00	Product Ion Scan	0.015	20000	20.00	143.00	142.00	15.00

UFMS
ULTRA FAST MASS SPECTROMETRY

Enhanced Support System for Data Management

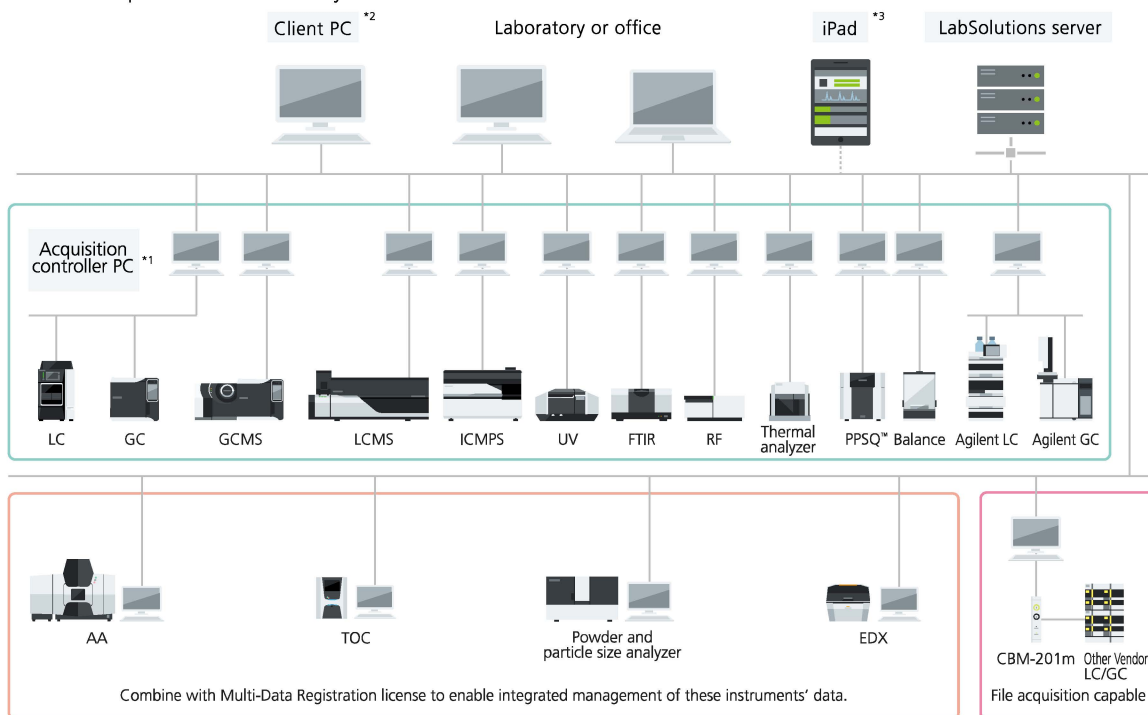
LabSolutions™ DB/CS Realizes Complete Data Integrity*

LabSolutions DB/CS is the integration software for analytical instruments that complies with regulations regarding electronic records and signatures, such as "FDA 21 CFR Part 11" and "ER/ES guidelines".

Data management with LabSolutions prevents overwriting or deleting analysis data. It also offers a complete suite of advanced security features to provide an optimal solution for data integrity.

Network System: LabSolutions CS

Data acquired from multiple systems can be reviewed or confirmed using client computers connected via a LAN or other network. If multiple systems are used, data obtained from each system can be reviewed from any client computer. Even in the case of multiple analysts using the same system, the ability to separate analytical work from measurement work improves work efficiency.



*1 The acquisition control PC controls analytical instruments. It can also be used to send analytical instructions and perform post-run analysis, just like a client PC.

*2 If a terminal service is used, then LabSolutions software does not need to be installed on client PCs.

*3 If an iPad is used, then XenApp from Citrix must be installed.

Standalone Database System: LabSolutions DB

LabSolutions DB manages data by connecting a computer with analysis instruments, which do not have network connections. It is recommended for facilities that do not require network connections and want to be ER/ES compliant with one computer.

*LabSolutions DB/CS is optional software that provides enhanced data integrity support. Some analysis systems and functions are not supported in contrast to the standard workstation software GCMSsolution.

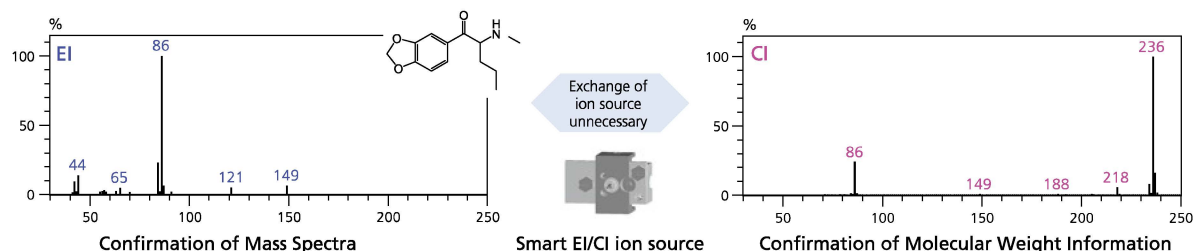
Configure Optimal Analysis Systems to Meet Your Needs

For GC-MS/MS analysis, different system configurations may be required depending on the application and sample-introduction needs. The GCMS-TQ8040 NX offers a wide variety of system configurations and sample-introduction devices to enable an expanded range of applications.

Smart EI/CI Ion Source Easily Switches Between EI and CI Methods

The Smart EI/CI ion source has been developed in order to acquire CI data without switching the ion source, and without losing the sensitivity of EI, which is most commonly used.

Even when it is difficult to perform identification with the EI mode using the mass spectral library, molecular weight information can be obtained from CI data, thus helping in the estimation of unknown compounds.



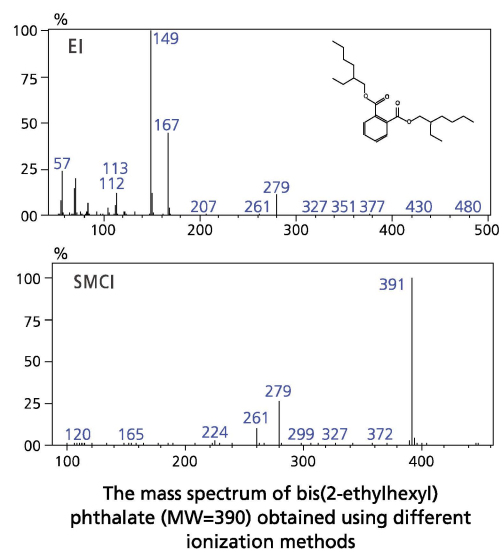
SMCI Unit

SMCI (Solvent Mediated Chemical Ionization) is a soft ionization method for GCMS. The headspace reagent gas from the sample bottle is introduced into the GCMS ionization unit to be ionized, which then causes chemical ionization (CI) of the target molecule via protonation.* Previous CI methods have required the use of flammable reagent gas cylinders, but SMCI can be carried out with a general organic solvent such as methanol or acetonitrile, together with nitrogen or argon gas. This results in greater safety and lower running costs.



SMCI unit+GCMS-TQ8040 NX

SMCI can obtain the same results as previously-existing CI methods, but is less dependent on the compound. For example, it has been difficult to verify the molecular weight of phthalate esters using EI or previously-existing CI method, whereas SMCI can identify the quasi-molecular ions.

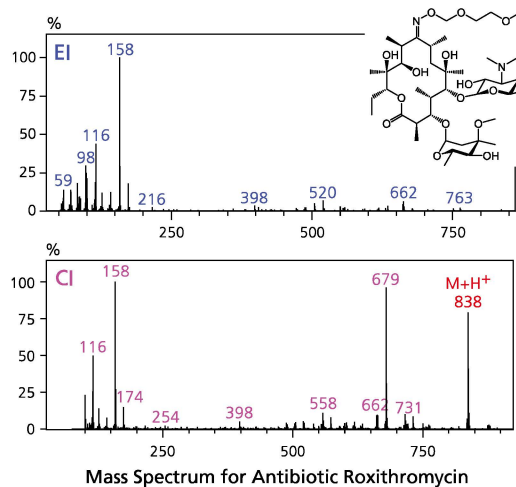


DI-2010 Direct Inlet System

Direct sample injection (DI) is a method in which a sample is injected directly into the ion source without passing through the gas chromatograph (GC). This is an effective method for measuring the mass spectra of synthetic compounds, and can be used easily with a typical GC-MS configuration. By using this in combination with Smart EI/CI ion source, EI and CI mass spectra can easily be collected.



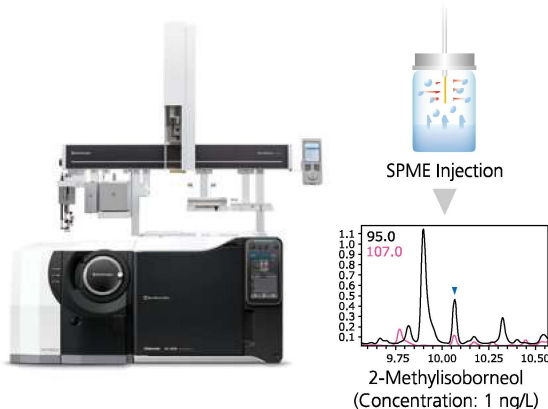
Components that are thermally degradable or difficult to vaporize are not suited to GC analysis. However, their mass spectra can be obtained easily using the DI probe.



■ AOC-6000 Plus Multifunctional Autosampler System

The AOC-6000 Plus supports three sample injection methods: liquid sample injection, headspace (HS) injection, and solid phase micro extraction (SPME) injection, so samples in a variety of forms can be analyzed. It allows the sample injection method to be switched automatically, enabling different sample injection methods to be combined in a continuous operation.

With the automatic syringe exchange and vial mixing function, standard samples can be prepared automatically with a variety of dilution levels, and everything from the creation of calibration curves to the quantitative determination of unknown samples can be fully automated.



■ HS-20 NX Headspace Analysis System

The HS-20 NX headspace sampler provides strong backup for the analysis of volatile components at every stage from research to quality control departments. The high-sensitivity electronic cooling trap enables quantitative and qualitative determination of trace components that cannot be detected with a conventional headspace sampler.

The HS-20 NX transfer line is built into the GC unit, which makes it easy to combine the HS-20 with the AOC-20 liquid sample injector, as well as to switch between these units.



■ OPTIC-4 Multimode Sample Inlet System

The OPTIC-4 multimode sample inlet is a GC injection port that enables a variety of sample injection modes for GC-MS, including large-quantity injection, inlet derivatization, thermal desorption, and DMI (difficult matrix introduction).

Combining this with an autosampler enables automatic replacement of inserts, improving productivity in multisample analyses.



■ TD-30 Thermal Desorption System

Thermal desorption systems heat samples in a sample tube and then concentrate the thermally desorbed gases before injection into a GC-MS. They are commonly used to measure volatile organic compounds (VOCs) in the atmosphere or measure trace components that are generated from plastic or other samples.

The TD-30R can accommodate 120 samples for excellent processing capacity and offers outstanding expandability, such as functionality for retrapping components or for automatically adding an internal standard substance.



GCMS-TQ, UFMS, Nexis, ClickTek, UFSweeper, Smart MRM, Active Time Management, GCMSsolution, Smart Database, LabSolutions Insight, Smart Pesticides Database, Smart Metabolites Database, Smart Aroma Database, Smart Forensic Database, Smart Environmental Database, Quick-DB, ASSP, AOC and LabSolutions are trademarks of Shimadzu Corporation or its affiliated companies in Japan and/or other countries. MonoTrap is a trademark of GL Sciences Inc.



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Gas Chromatograph Mass Spectrometer

GCMS-QP2020 NX

UFMS
ULTRA FAST MASS SPECTROMETRY



Smart Solutions Expanding the Possibilities of Laboratories to their Fullest Potential

GCMS-QP2020 NX

GC/MS is now a standard analytical technique used in a variety of fields. With each new development, requests for more cost-effective systems and improvements in the work-life balance of users grow. Dedicated to improving efficiency, the GCMS-QP2020 NX can assist any laboratory, regardless of its analysis focus, achieve its full potential.





Smart Performance

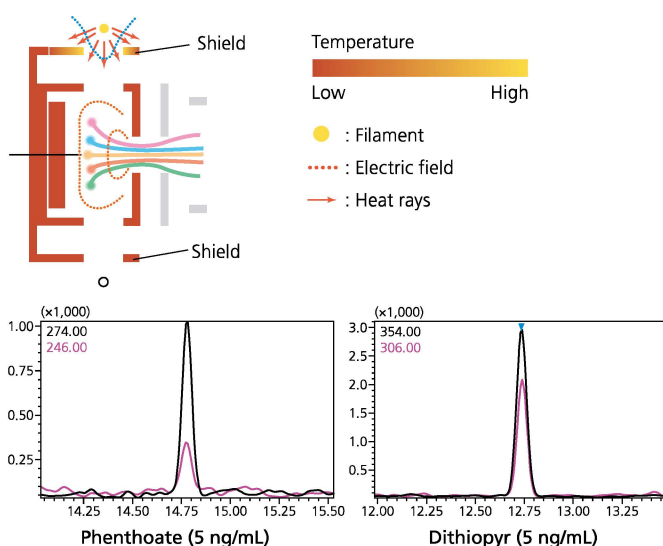
Provides Higher Sensitivity and Reduces Operational Costs

A large-capacity differential exhaust turbomolecular pump and a high-performance flow controller ensure that the utmost in sensitivity is obtained under all conditions used for GC. This sensitivity combined with high-speed analysis capabilities helps maximize laboratory efficiency by reducing analysis times. In addition, the system can be safely operated using carrier gases other than helium, such as hydrogen or nitrogen, thereby reducing operating costs.

Technology Achieves High Sensitivity

■ Ion Source Featuring High Sensitivity and Long-Term Stability

The filament and the ion source box have been separated, which reduces the impact of the filament potential on the interior of the ion source. In addition, a shield is provided to block radiant heat generated by the filament, achieving a uniform temperature inside the ion source box. Thus, active spots inside the ion source are not prone to occur, enabling high-sensitivity analysis with long-term stability. (Patent: US7939810)



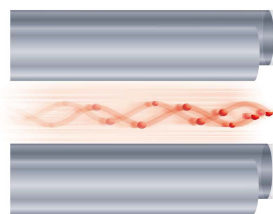
■ Large-Capacity Differential Exhaust System

Through adoption of a new type of turbomolecular pump with increased exhaust efficiency, the system's performance is greatly improved when using hydrogen or nitrogen, in addition to helium, as the carrier gas. Moreover, a differential exhaust method is used to create a vacuum separately for the ion source and the quadrupole. As a result, an optimal MS state can be realized regardless of the conditions imposed by the carrier gas used.

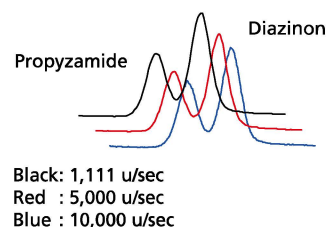
High-Speed Scan Control Technology

■ Advanced Scanning Speed Protocol (ASSP™)

The rod bias voltage is automatically optimized during high-speed data acquisition, which minimizes sensitivity deterioration during high-speed scans of 10,000 u/sec or faster. The sensitivity obtained is at least five times better than with conventional systems. This is effective for scan data sensitivity improvements and favorable mass spectrum acquisition, particularly in high-speed analysis with Fast-GC/MS, simultaneous Scan/SIM, FASST analysis, and applications using GC × GC-MS. (Patent: US6610979)



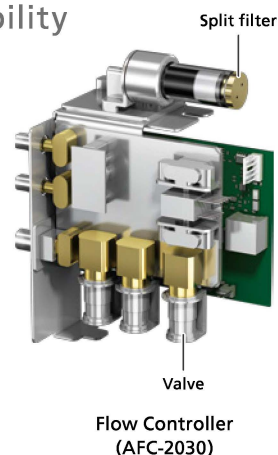
Newly Patented Technology (ASSP)



■ New Flow Controller Achieves Exceptional Reproducibility

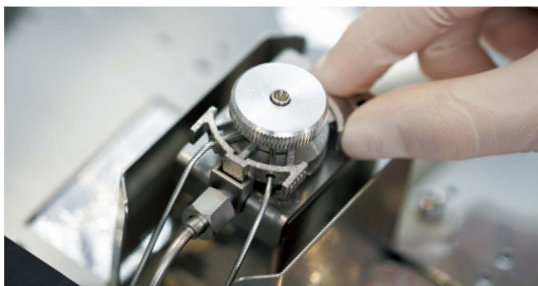
A new flow controller (AFC) with a CPU uses various control methods to control carrier gas flow to a constant flow speed, flowrate, or pressure. It can also accurately trace the analytical conditions already being used.

The split line filter can be replaced without any tools. Internal contamination can be confirmed visually, ensuring filters are replaced at the proper time.



■ One Touch Inlet Maintenance

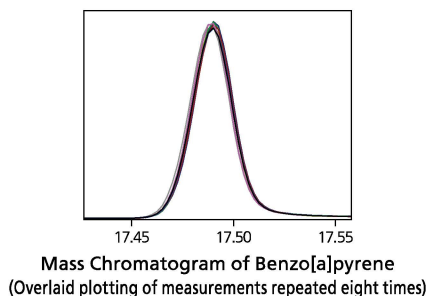
The injection port can be opened or closed without tools by simply sliding the ClickTek™ lever. Replace the insert, slide the lever and feel the click for a leak-free install every time.



ClickTek Nut

■ Advanced GC Oven

The improved temperature control function enables more precise temperature control of the GC oven, which improves the precision of retention time reproducibility. In addition, three oven cooling rate levels can be specified to minimize damage to column liquid phases and maximize the service life.



	Area value %RSD	Retention time %RSD
Acenaphthylene	0.969	0.005
Fluorene	0.918	0.007
Phenanthrene	1.075	0.006
Anthracene	1.141	0.007
Pyrene	1.263	0.004
Benzo[a]anthracene	1.405	0.005
Chrysene	1.283	0.005
Benzo[b]fluoranthene	1.940	0.003
Benzo[k]fluoranthene	1.268	0.003
Benzo[a]pyrene	0.781	0.005
Indeno[1,2,3-cd]pyrene	0.744	0.004
Dibenz[a,h]anthracene	0.836	0.004
Benzo[ghi]perylene	0.767	0.004

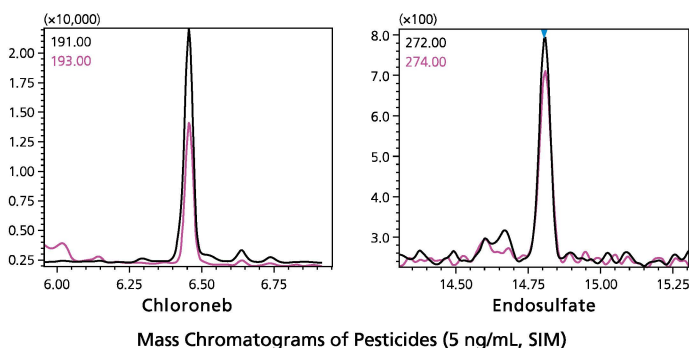
Repeatability with Polycyclic Aromatic Hydrocarbons (PAHs)

■ Reduced Operating Costs Using Alternative Carrier Gases

Hydrogen and nitrogen are less expensive than helium and are readily available, so they are attracting attention as alternative carrier gases. The high-performance Advanced Flow Controller (AFC) provides accurate control even with hydrogen and nitrogen. In addition, the new large-capacity differential exhaust system enhances the vacuum performance when hydrogen or nitrogen is used as the carrier gas, so the optimal MS state is achieved under all carrier gas conditions.

Application Example Using Hydrogen as the Carrier Gas

Hydrogen and nitrogen provide less sensitivity than helium. However, chromatogram patterns equivalent to when helium is used can be obtained by using a short column with a narrow internal diameter. EZGC® Method Translator*1, a method conversion program provided by Restek, can convert the analysis conditions when helium is used to the optimal analysis conditions for the alternative carrier gas.

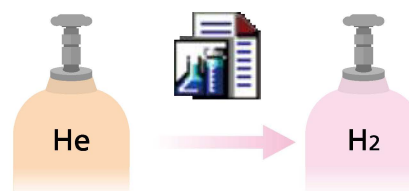


The retention indices are essentially unchanged even when the conventionally used analysis conditions are converted for using hydrogen as the carrier gas. Mass spectral libraries containing retention indices and databases provided by Shimadzu should be used.



Hydrogen Sensor Assures Safety

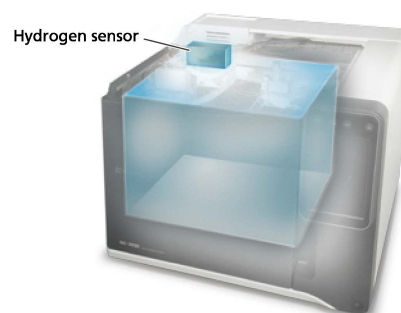
A hydrogen sensor (optional) can be installed inside the GC. By discovering potential leaks in advance, accidents can be prevented. Furthermore, the main unit is equipped with an automatic carrier gas leak checking function, which strongly supports the use of hydrogen as a carrier gas.



EZGC® Method Translator			
Carrier Gas	Original	Translation	
	Helium	Hydrogen	
Column			
Length	30.00	20.00	m
Inner Diameter	0.25	0.18	mm
Film Thickness	0.25	0.36	µm
Phase Ratio	230	123	
Control Parameters			
Column Flow	1.42	1.20	mL/min
Average Velocity	43.92	76.14	cm/sec
Holdup Time	1.14	0.44	min
Inlet Pressure	99.80	101.02	kPa
Outlet Pressure (abs)	0.00	0.00	kPa
Oven Program			
☐ Isothermal ☒ Ramps			
Number of Ramps (1-4)	2		
Ramp Rate (°C/min)	80	2	
Temp (°C)	20	180	0
Hold Time (min)	30.7	180	0
Ramp Rate (°C/min)	7.1	280	2.1
Temp (°C)	80	1.13	
Control Method			
Constant Pressure			
Results			
Solve for: ☒ Efficiency ☐ Speed ☐ Translate ☐ Custom			
Run Time	30.00	20.59	min
Speed		1.46	x

EZGC Method Translator

*1 EZGC is a trademark of Restek Corporation.
For details, refer to the Restek Corporation website.
<http://www.restek.com/ezgc-mtfc>

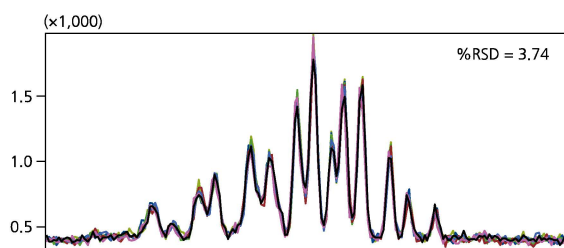
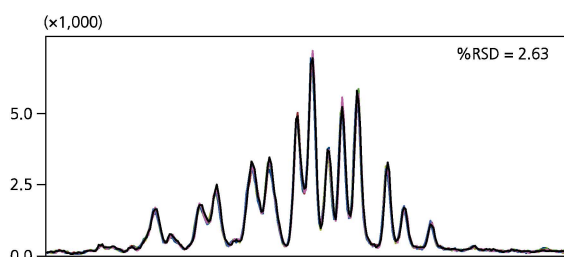
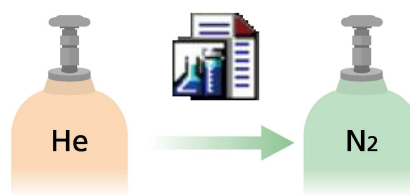


Hydrogen Sensor Monitors Inside of GC Oven

Application Example Using Nitrogen as the Carrier Gas

The use of helium as the carrier gas is a major contributor to instrument operating costs.

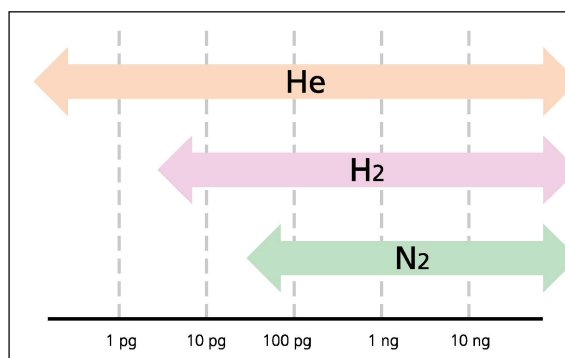
Nitrogen is approximately 10 times less expensive than helium, so significant reductions in operating costs can be expected by utilizing nitrogen as the carrier gas.



SIM Mass Chromatogram for DINP
(0.5 µg/mL, overlay at 7 replicates)

Top: Helium Carrier Gas (99.99%, with gas purification filter)

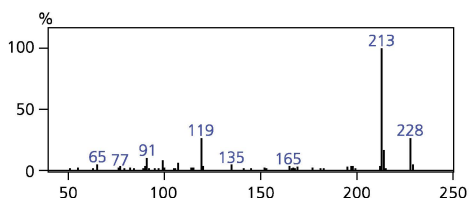
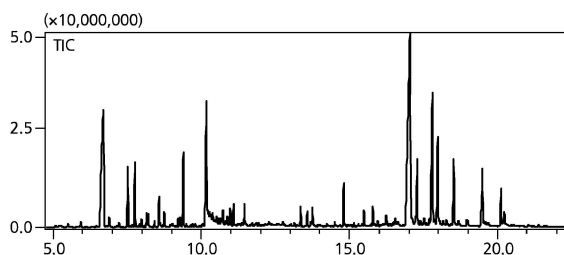
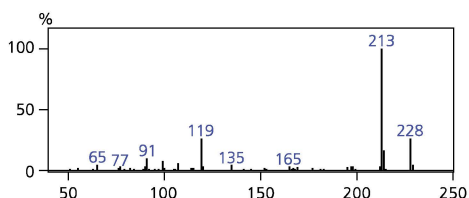
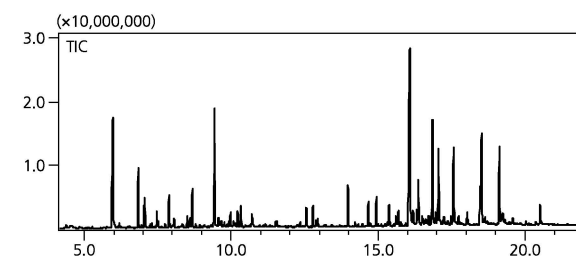
Bottom: Nitrogen Carrier Gas (99.99%, with gas purification filter)



Indication of Measurement Range for Each Carrier Gas
(On-Column Amount)

These measurement ranges are at best only guidelines, and may be unsuitable depending on the target compound sensitivities and the compound characteristics.

Equivalent chromatogram patterns and mass spectra were obtained even though the analysis conditions used with helium as the carrier gas were converted for using nitrogen as the carrier gas. This can be applied for purposes of qualitative analysis including the analysis of evolved gases from polymeric materials.



Sample Analysis of the Instantaneous Thermal Decomposition of an Electronic Board Utilizing Py-GC/MS
(mass spectrum for bisphenol A)

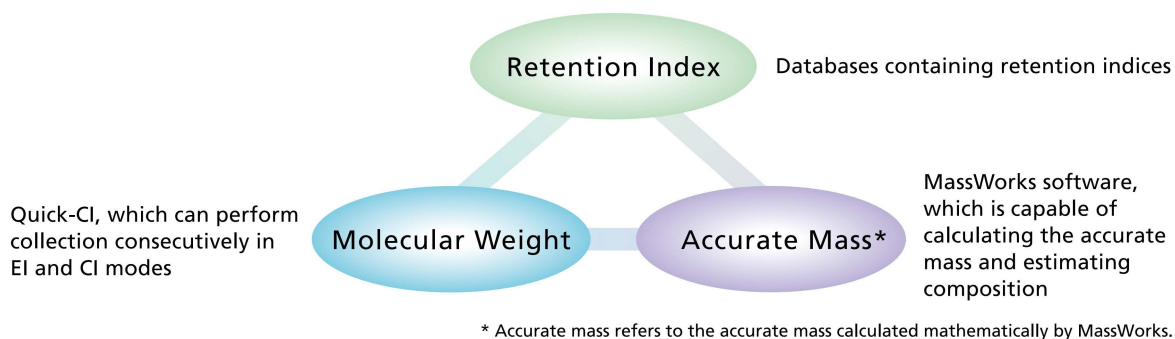
Top: Helium Carrier Gas (99.99%, with gas purification filter)

Bottom: Nitrogen Carrier Gas (99.99%, with gas purification filter)

Smart Performance

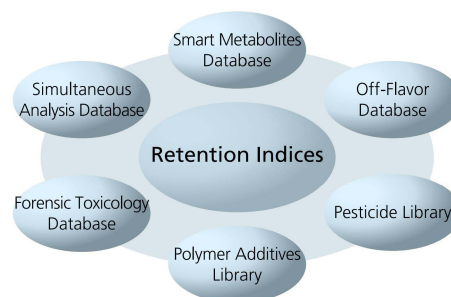
Easily Obtains All the Information Required for Qualitative Analysis

With GC/MS, which has significant qualitative capabilities, a wealth of fragment information is obtained, so it is used as a means of identifying unknown compounds. A mass spectral library is generally used as a means of compound identification. However, experience with compound identification is required if the compound is not registered in the mass spectral library, or there are a number of compounds with similar structures. With the GCMS-QP2020 NX, in addition to the mass spectrum, three kinds of value-added compound information are used in combination to support high-accuracy qualitative analysis.



Databases Containing High Value-Added Retention Indices

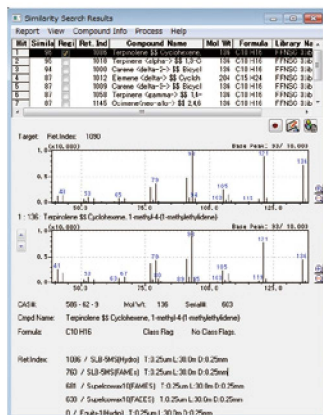
Databases are available with retention indices specific to a variety of application fields, including foods, chemistry, fragrances, forensics, and metabolite component analysis. In addition to mass spectra, searches are performed in combination with retention indices, which are very highly compound specific, so isomers and compounds with similar structures are accurately identified.



Other Mass Spectra Libraries

- **NIST Mass Spectral Library**
Registered with approx. 350,643 spectra.
- **WILEY Mass Spectral Library**
Registered with approx. 775,500 spectra.
- **GC/MS MPW DRUG Library**
Drugs, toxicants, pesticides, environmental pollutants (approx. 10,430 compounds)

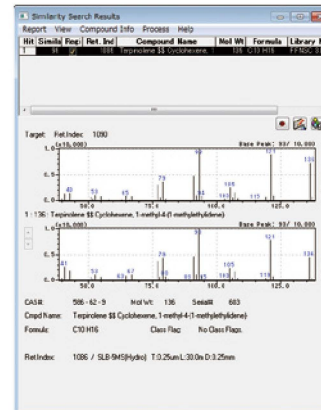
Up to 10 library files can be configured. In addition to the public NIST and Wiley libraries, a variety of library files can be configured. In addition, there is a function to easily create private libraries.



☒ Ret. Index Allowance

- 10 + 10

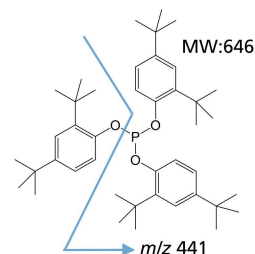
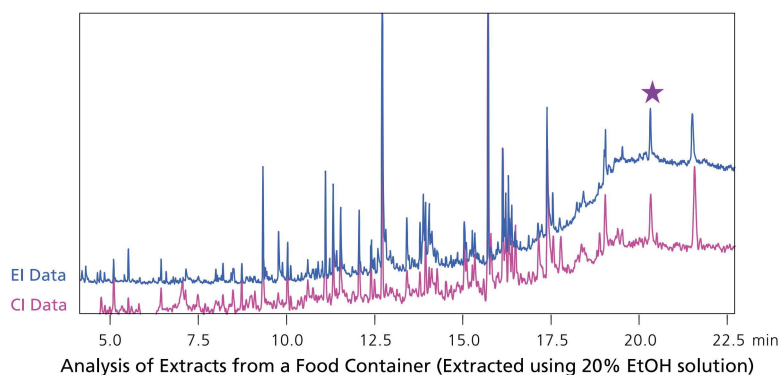
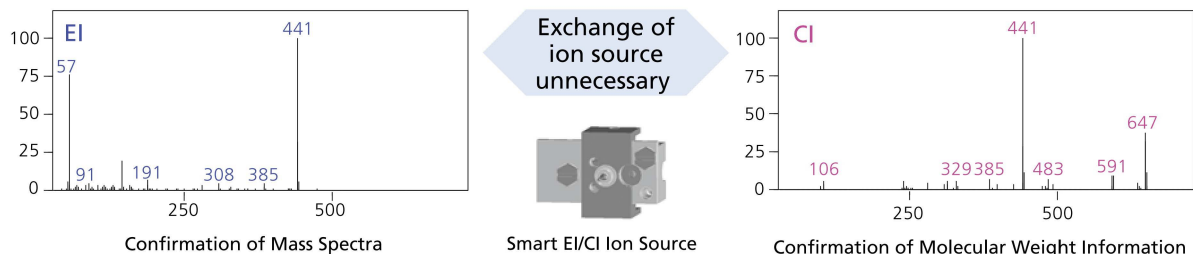
Narrowed by retention index



Smart EI/CI Ion Source Easily Switches Between EI and CI Methods

The Smart EI/CI ion source has been developed in order to acquire CI data without switching the ion source, and without losing the sensitivity of EI, which is most commonly used.

Even when it is difficult to perform identification with the EI mode using the mass spectral library, molecular weight information can be obtained from CI data, thus helping in the estimation of unknown compounds.

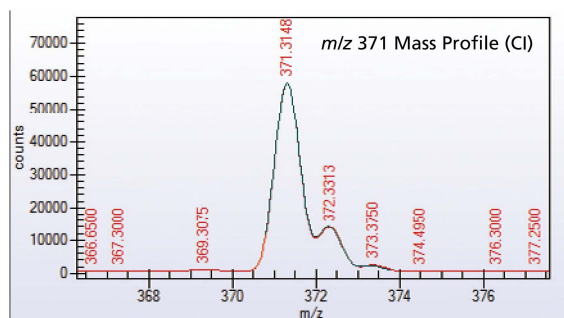
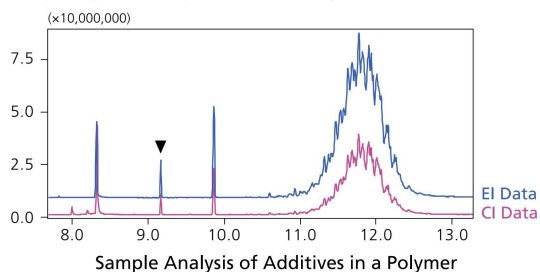


It can be estimated that the peak shown with an asterisk in the graph on the left is Tris (2,4-di-t-butylphenyl) phosphite, which is used as an antioxidant, based on the EI mass spectrum and the molecular weight information provided by CI spectra.

Estimating Composition Using Accurate Mass

The MassWorks software calculates the theoretical accurate mass from the quadrupole MS mass profile. It then outputs candidate compositional formulas based on isotopic ratios and the theoretical accurate mass. This software is useful for estimating the composition of compounds that are not registered in a mass spectral library.

The GCMSSolution™ software can simultaneously output GC/MS data and mass profile data. The majority of compounds detected with the GC/MS data can be identified from a mass spectral library. MassWorks is then used to estimate the composition of any compounds that are not identified, further increasing the quality of the qualitative analysis.



	Formula	Mono Isotope	Mass Error (mDa)	Mass Error (PPM)	Spectral Accuracy	RMSE	DBE
1	C ₂₂ H ₄₂ O ₄	371.3156	-0.7663	-2.1176	96.9772	256	1.5
2	C ₁₉ H ₃₀ O ₃	371.3120	2.8124	7.5743	96.7149	321	-3.5
3	C ₁₉ H ₄₀ O ₂ PS	371.3107	4.0056	11.0030	97.0750	531	-3.5
4	C ₁₉ H ₄₀ O ₄ S	371.3190	-4.1571	-11.1956	97.6479	588	-3.5
5	C ₁₉ H ₄₀ O ₂ P ₂	371.3202	-5.4303	-14.6244	98.8709	282	-3.5
6	C ₂₂ H ₄₄ O ₂ P	371.3073	7.4584	20.0811	96.8498	287	1.5
7	C ₁₉ H ₄₀ P ₂ S	371.3025	12.3283	33.2017	96.0966	476	-3.5
8	C ₁₉ H ₄₀ O ₂ S ₂	371.3012	13.6014	36.6305	95.1422	1,214	-3.5

It is predicted to be diethylhexyl adipate (C₂₂H₄₂O₄) based on the candidate compositional formula and the mass spectral pattern.

Smart Productivity

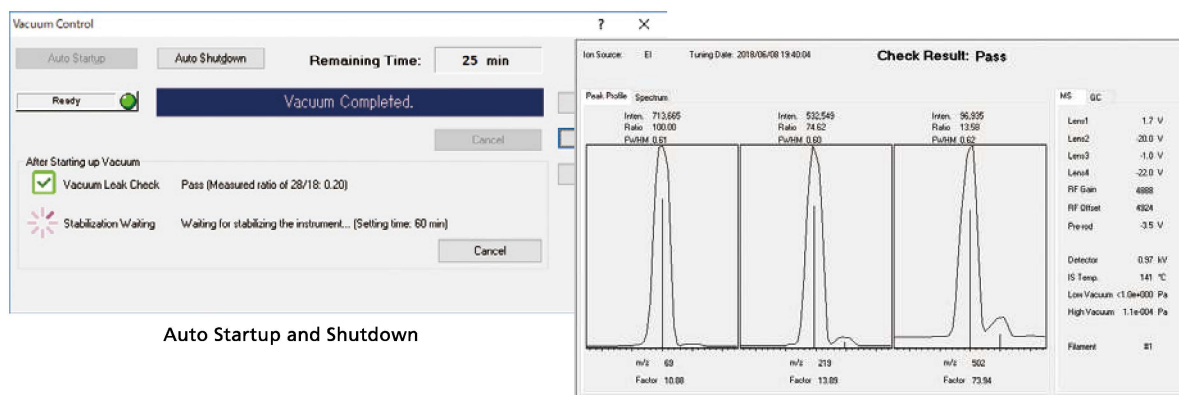
Efficient Operation of the System with Time Management Function

The GCMS is now a standard system for analysts, and a single system can be used for a wide variety of applications. The active time management feature appropriately manages times when the system requires maintenance, or when system changes are being made, or the waiting time for a user when multiple users are waiting to use the system. This ensures more efficient use of the system and greater uptime.

■ Active-Time Management™ That Accurately Determines Operation Time

Time Management during Instrument Startup/Shutdown

The mass spectrometer has to be operated in a vacuum condition, the startup and stopping of the system takes time depending on the condition. Determining this can be a challenge. Since the amount of time that the system takes when starting up or stopping is displayed in real time, it is easy to accurately determine when maintenance of the ion source or analysis is possible. Moreover, tasks that until now needed to be performed by the user, such as leak checks upon system startup and auto tuning, are now performed automatically.



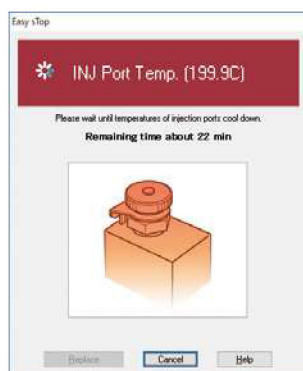
Auto Startup and Shutdown

Auto Tuning Check Result

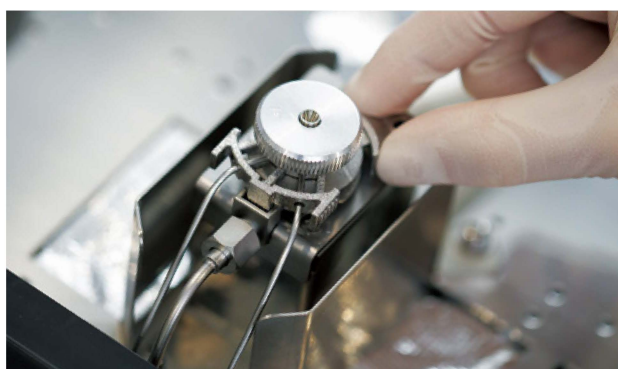
Time Management during Sample Injection Port Maintenance

The Easy sTop function, used to safely maintain the sample injection port without releasing the vacuum, displays the remaining time (cooling-down time) when the septum or the insert can be replaced in real time. Maintenance time can be minimized by understanding the accurate remaining time.

Furthermore, by using a ClickTek nut on the top of the sample injection port, the port can be opened or closed without tools, by simply using fingers to twist a lever. That enables faster and easier insert replacement than ever before.



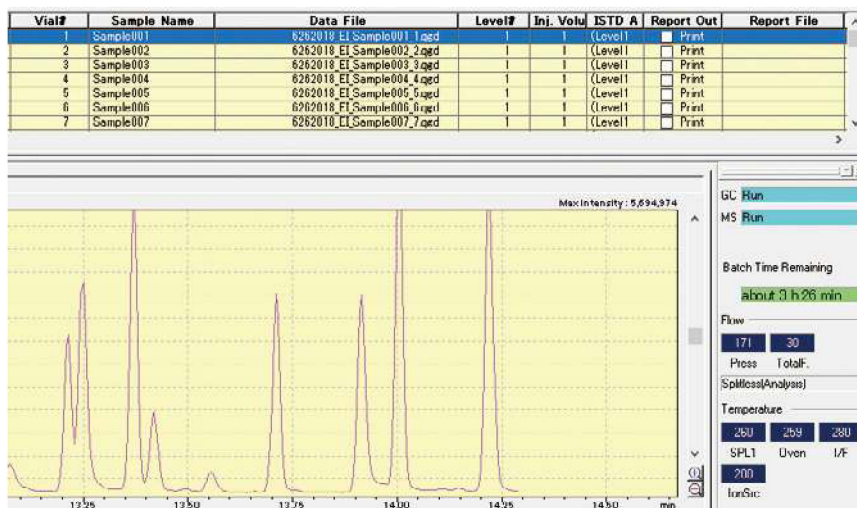
Easy sTop Function



ClickTek Nut

Time Management for Continuous Analysis

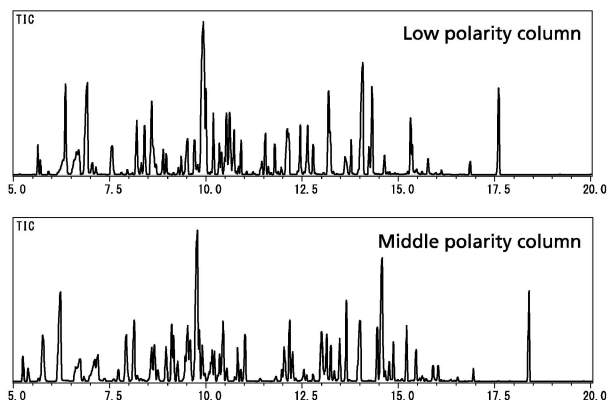
By displaying the time required for continuous analysis in real time, the time when the current continuous analysis will finish can be accurately confirmed. This increases the instrument operating time (active time) by reducing standby time required during continuous analysis or while switching between different users. In addition, because this function makes it easier to schedule the timing for analysis preparations, such as sample preparation and pretreatment, based on the finish time of the previous analysis, it enables analytical processes to be performed more efficiently, which can help improve work-life balance.



Time display for continuous analysis can be used only in liquid injection using AOC-20i.

Twin Line MS System Eliminates the Need to Swap Columns

The GCMS-QP2020 NX is capable of accepting installation of two narrow-bore capillary columns into the MS simultaneously. This allows you to switch applications without physically modifying the column installation. Simply decide which column is best for your analysis and choose the associated injection port.



Analysis of Flavor and Fragrance Components Using Complementary Column Phases

Smart Operation

Dramatic Improvement in the Efficiency of Multicomponent Simultaneous Analysis

The efficiency of multi-component simultaneous analysis is dramatically improved thanks to Smart SIM™, which simplifies and automates the method creation, and LabSolutions Insight™ software, which greatly reduces the time needed for analyzing data.

In addition, databases specialized for specific fields are provided, so regardless of the field in which quantitative analysis is to be performed, highly reliable data can be obtained as the result of the optimized analytical conditions.

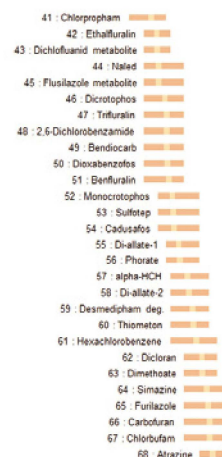
More Convenient Multicomponent Analysis Achieved by Smart SIM

The Smart SIM automatic method creation function automatically configures the SIM program to suit the retention times. Even in cases where there are a number of compounds and they are apportioned to multiple methods, the methods can be integrated while maintaining the sensitivity as is. This significantly reduces the number of analysis cycles and the measurement time, improving productivity.



Smart SIM

The optimal MS table is automatically created



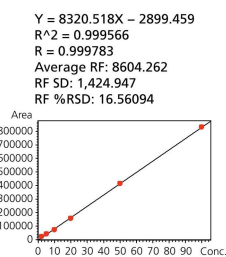
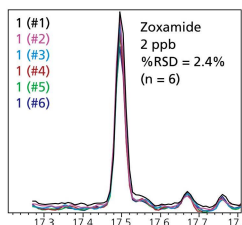
All compound information contained in methods for currently used Shimadzu GC/MS systems can be stored in the database simply by selecting the files.

Input					m/z for SIM or Scan											
Serial#	Type	Acq. Mode	Method No.	Compound Name (J)	Type	m/z	Ratio	Type	m/z	Ratio	Type	m/z	Ratio	Type	m/z	Ratio
1	Target	SIM	1	Adicarb deg.	T	115.0	100.00	Ref1	77.0	89.47						
2	Target	SIM	1	DOP	T	121.0	100.00	Ref1	77.0	89.47						
3	Target	SIM	1	Albocarb deg.	T	68.0	100.00	Ref1	80.0	15.26						
4	Target	SIM	1	Chlorfentazine deg.	T	137.0	100.00	Ref1	139.0	39.20						
5	Target	SIM	1	Imidacloprid	T	99.0	100.00	Ref1	71.0	18.40						
6	Target	SIM	1	Methamidophos	T	141.0	100.00	Ref1	94.0	337.84						
7	Target	SIM	1	Dichlorvos	T	185.0	100.00	Ref1	109.0	403.23						
8	Target	SIM	1	Naledoxin	T	70.0	100.00	Ref1	149.0	51.20						
9	Target	SIM	1	Albocarb deg.	T	138.0	100.00	Ref1	173.0	6.98						
10	Target	SIM	1	Dicrotophos	T	171.0	100.00	Ref1	173.0	76.00						
11	Target	SIM	1	EBTC	T	128.0	100.00	Ref1	189.0	24.60						
12	Target	SIM	1	Biphenyl	T	154.0	100.00	Ref1	183.0	37.80						
13	Target	SIM	1	Butylate	T	146.0	100.00	Ref1	156.0	99.10						
14	Target	SIM	1	Mevinphos	T	127.0	100.00	Ref1	192.0	31.60						

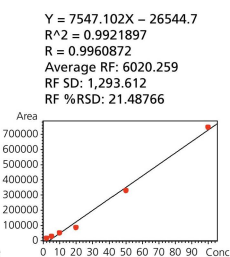
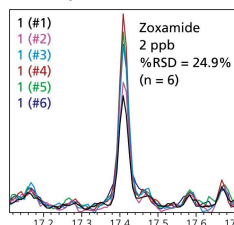
High-sensitivity, high-accuracy analysis is enabled in comparison to the group measurement method. In a batch analysis of 434 components, favorable repeatability and calibration curves were obtained, even down to the trace-quantity region, improving quantitative performance.



Smart SIM



Conventional Method (Group Measurement)

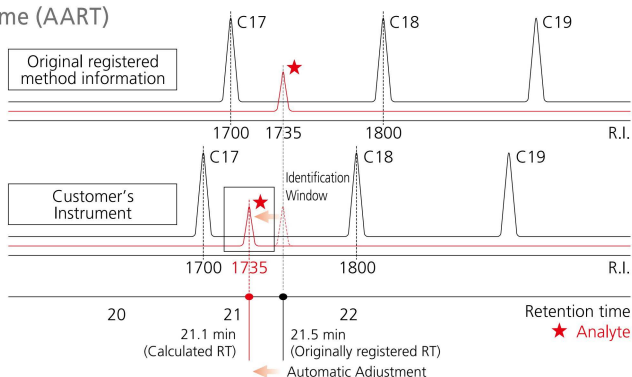


■ Functions Using Retention Indices

Automatic Adjustment of Compound Retention Time (AART)

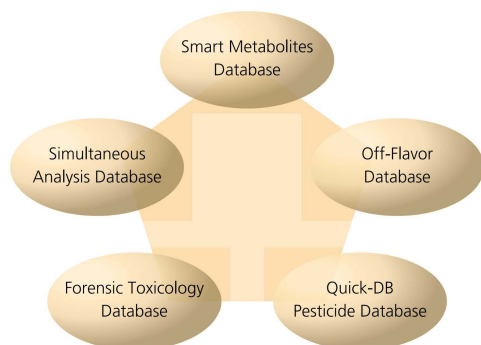
The AART (Automatic Adjustment of Retention Time) function can estimate the retention times of target components from retention indices and the retention times of an alkane standard mix*.

* Requires alkane mix which is sold separately.

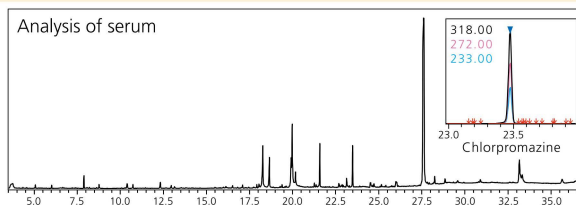


■ Databases Specific to All Kinds of Industries

Databases are available for a variety of industries, and contain analysis conditions optimized for multicomponent batch analysis. Analysis can start immediately just by automatically correcting the retention times utilizing the AART function.

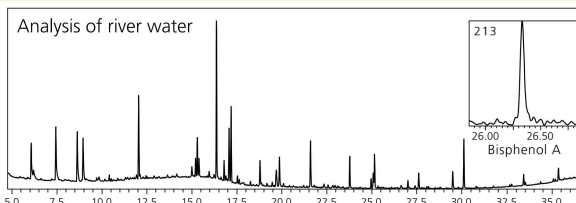


GC/MS Forensic Toxicological Database



It is pre-registered with more than 1400 mass spectra including free-, TMS- and TFA-body types for compounds that are required in forensic toxicological analysis of drugs of abuse, drugs for psychiatric and neurological disease, and other medicines and pesticides.

Compound Composer Database Software for Simultaneous Analysis (Environmental Analysis)

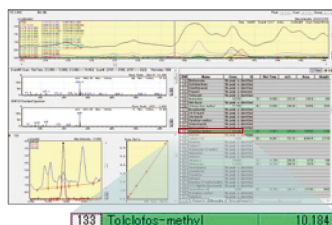


Simultaneous GC/MS analysis supporting identification and quantification of 942 environmental pollutants can be performed. The retention times and calibration curve information of environmentally hazardous chemical substances are registered, so approximate concentrations can be obtained, even when it is difficult to obtain standards.

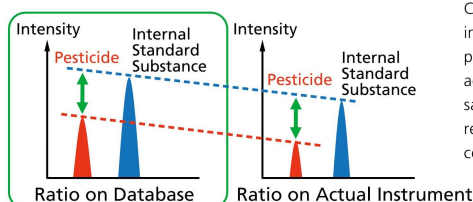
■ Quantitation Analysis Without Using Standard Samples

Quick-DB™ GC/MS Residual Pesticides Database is preregistered with calibration curves created utilizing pesticide surrogates, enabling quantitative analysis without having to create methods using standards. A total of 474 components (for scan or SIM mode) are contained in the database, enabling the comprehensive quantitative analysis of pesticides.

(Compound Composer Database Software and GC/MS Forensic Toxicological Database also contain this function.)



(Tolclofos-methyl: 10 ng/mL)



Calibration curves of the relative ratio of internal standard substances are preregistered. A semi-quantitative value is acquired by adding an internal standard to a sample. If accurate quantitative values are required, be sure to quantify them using a conventional method.

Multianalyte Data Analysis with More Efficiency Using LabSolutions Insight

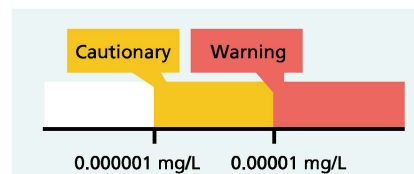
LabSolutions Insight quantitative analysis support software includes functionality for enhancing the throughput of multianalyte data analysis, making it especially helpful for routine analysis. Quantitative results for a series of data sets can be displayed at the same time for data analysis. Chromatograms for each set of sample data can be displayed side-by-side for each compound, making it easy to confirm peak detection and quantitative results. Color-coded flagging functionality makes it easy to quickly see peaks from any of multiple analytes that exceed criteria values. That drastically decreases the number of peaks that need to be checked and improves the efficiency of quantitative analysis processes.

■ More Efficient Multianalyte Data Analysis

Users can select the optimal method for displaying data based on their workflow. For example, data analysis windows can be displayed for each target compound or each set of measurement data, or quantitation or area values can be displayed as a list. If necessary, quantitative analysis can be repeated with peaks directly corrected, which provides intuitive operability.

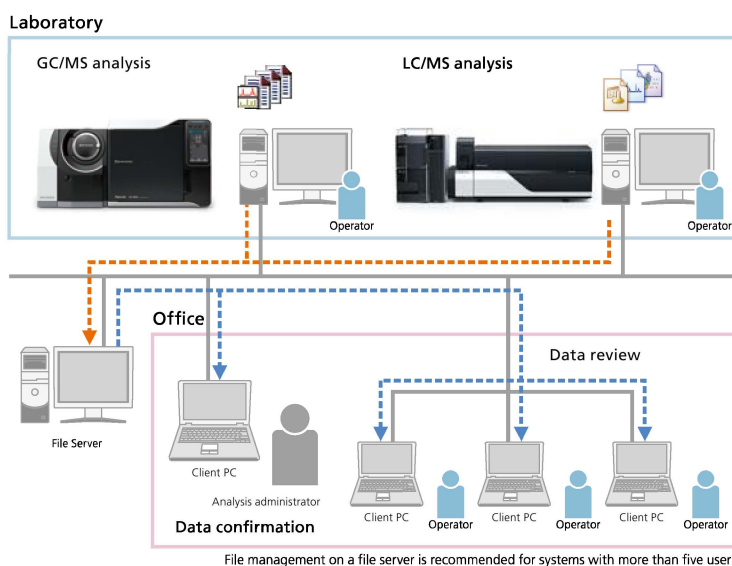
■ Visualization of Quantitative and Accuracy Control Results

Quantitative and accuracy control results can be presented more clearly by using the flagging function to color-code result values that exceed specified criteria values or by only displaying flagged results. Five levels of criteria values can be indicated for quantitative results, making it easy to confirm the corresponding criteria value range for the detected compounds. Flagging immediately reflects results from any corrections made to manual peak integration or calibration curves.



■ Network Support

Data acquired from multiple systems can be reviewed or confirmed using client computers connected via a LAN or other network. If multiple systems are used, data obtained from each system can be reviewed from any client computer. Even in the case of multiple analysts using the same system, the ability to separate analytical work from measurement work improves efficiency.



Enhanced Support System for Data Management

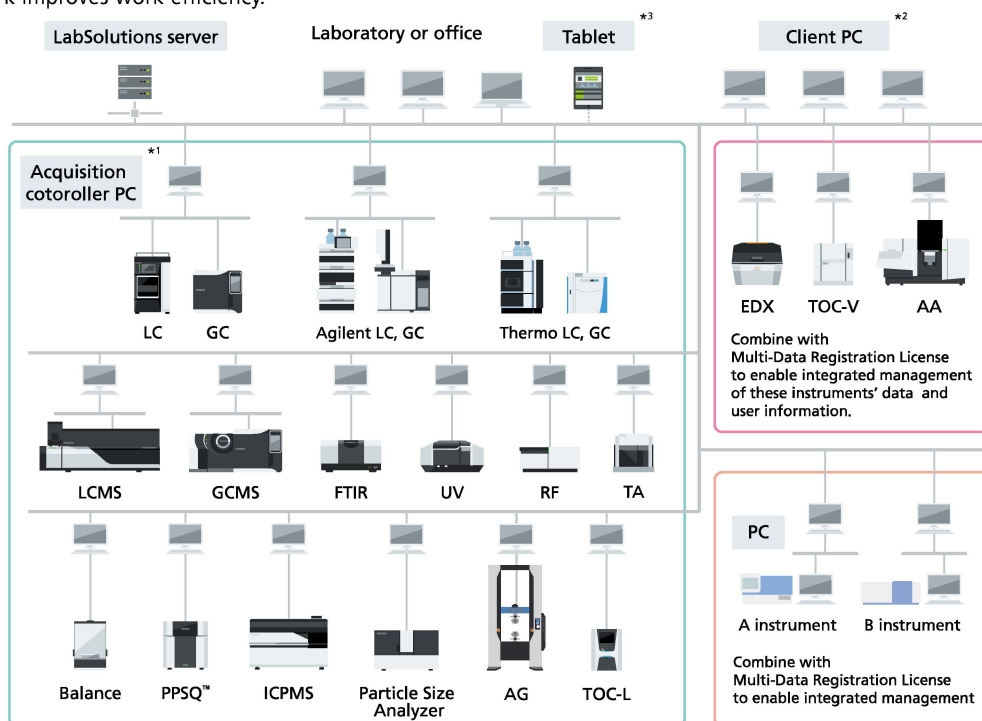
LabSolutions™ DB/CS Realizes Complete Data Integrity*

LabSolutions DB/CS is the integration software for analytical instruments that complies with regulations regarding electronic records and signatures, such as "FDA 21 CFR Part 11" and "ER/ES guidelines".

Data management with LabSolutions prevents overwriting or deleting analysis data. It also offers a complete suite of advanced security features to provide an optimal solution for data integrity.

Network System: LabSolutions CS

Data acquired from multiple systems can be reviewed or confirmed using client computers connected via a LAN or other network. If multiple systems are used, data obtained from each system can be reviewed from any client computer. Even in the case of multiple analysts using the same system, the ability to separate analytical work from measurement work improves work efficiency.



*1 The acquisition control PC controls analytical instruments. It can also be used to send analytical instructions and perform post-run analysis, just like a client PC.

*2 If a terminal service is used, then LabSolutions software does not need to be installed on client PCs.

*3 If an iPad is used, then XenApp from Citrix must be installed.

Standalone Database System: LabSolutions DB

LabSolutions DB manages data by connecting a computer with analysis instruments, which do not have network connections. It is recommended for facilities that do not require network connections and want to be ER/ES compliant with one computer.

*LabSolutions DB/CS is optional software that provides enhanced data integrity support. Some analysis systems and functions are not supported in contrast to the standard workstation software GCMSsolution.

Configure Optimal Analysis Systems to Meet Your Needs

For GC/MS analysis, different system configurations may be required depending on the application and sample-introduction needs. The GCMS-QP2020 NX offers a wide variety of system configurations and sample-introduction devices to enable an expanded range of applications.

■ SMC Unit

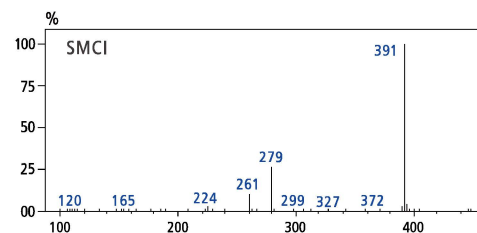
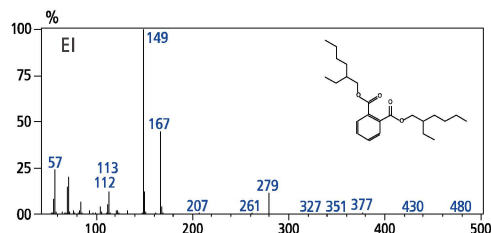
SMCI stands for Solvent Mediated Chemical Ionization, a soft ionization method for GCMS. The headspace reagent gas from the sample bottle is introduced into the GCMS ionization unit to be ionized, which then causes chemical ionization (CI) of the target molecule via protonation.* Previous CI methods have required the use of flammable reagent gas cylinders, but SMCI can be carried out with a general organic solvent such as methanol or acetonitrile, together with nitrogen or argon gas. This results in greater safety and lower running costs.



SMCI unit+GCMS-QP2020 NX

SMCI can obtain the same results as previously existing CI methods, but is less dependent on the compound. For example, it has been difficult to verify the molecular weight of phthalate esters using EI or previously existing CI method, whereas SMCI can identify the quasi-molecular ions.

* Patent pending



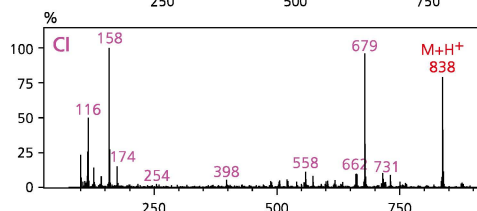
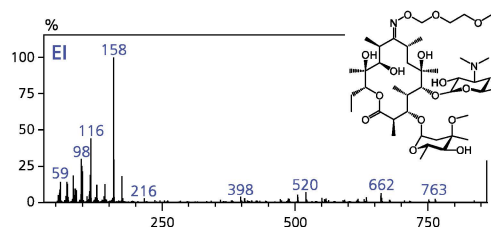
The mass spectrum of bis(2-ethylhexyl) phthalate (MW=390) obtained using different ionization methods

■ DI-2010 Direct Inlet System

Direct sample injection (DI) is a method in which a sample is injected directly into the ion source without passing through the gas chromatograph (GC). This is an effective method for measuring the mass spectra of synthetic compounds, and can be used easily for the usual GC-MS configuration. By using this in combination with Smart EI/CI ion source, EI and CI mass spectra can easily be collected.



Components that are thermally degradable or difficult to vaporize are not suited to GC analysis. Their mass spectra can be obtained easily using the DI probe.



Mass Spectrum for Antibiotic Roxithromycin

■ OPTIC-4 Multimode Sample Inlet System



The OPTIC-4 multimode sample inlet is a GC injection port that enables a variety of sample injection modes for GC-MS, including large-quantity injection, inlet derivatization, thermal desorption, and DMI (difficult matrix introduction).

Combining this with an autosampler enables automatic replacement of inserts, improving productivity in multisample analyses.

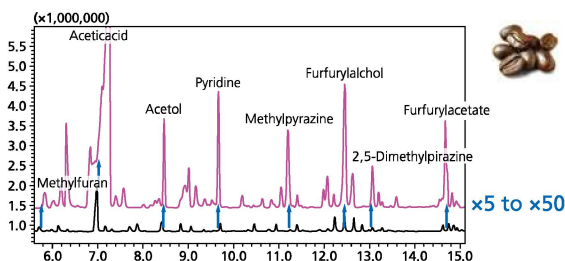
■ HS-20 NX Headspace Analysis System



The HS-20 NX series of headspace samplers provides strong support for all volatile component analyses, for everything from research to quality control.

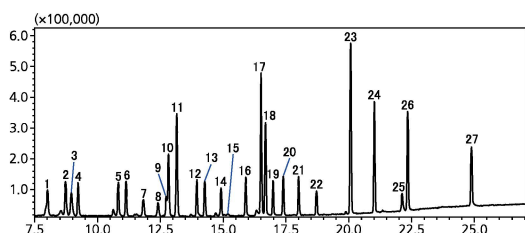
There is a loop model capable of static headspace analysis, and a trap model capable of trap headspace analysis.

High-Sensitivity Analysis of Fragrant Components in Coffee

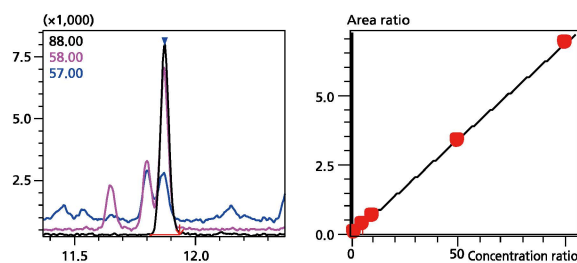


Trace quantities of fragrant components undetectable with conventional headspace samplers can be qualified and quantified by combining the high-sensitivity, electronically cooled trap with GC-MS.

Aqueous VOC Analysis



1. 1,1-dichloroethylene, 2. dichloromethane, 3. MTBE, 4. *trans*-1,2-dichloroethylene, 5. *cis*-1,2-dichloroethylene, 6. chloroform, 7. 1,1,1-trichloroethane, 8. carbon tetrachloride, 9. 1,2-dichloroethane, 10. benzene, 11. fluorobenzene (IS), 12. trichloroethylene, 13. 1,2-dichloropropene, 14. bromodichloromethane, 15. 1,4-dioxane-d8 (IS), 16. 1,4-dioxane, 17. *cis*-1,3-dichloropropene, 18. toluene, 19. *trans*-1,3-dichloropropene, 20. 1,1,2-trichloroethane, 21. tetrachloroethylene, 22. dibromochloromethane, 23. *m,p*-xylene, 24. *o*-xylene, 25. bromoform, 26. *p*-bromofluorobenzene (IS), 27. 1,4-dichlorobenzene



SIM Chromatogram (5 µg/L) and Calibration Curve (1 to 100 µg/L) of 1,4-Dioxane

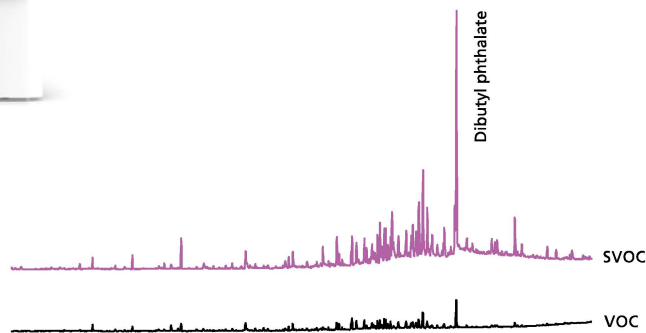
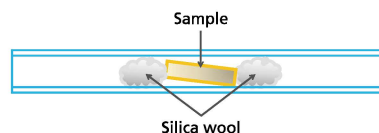
Analysis of a trace amount of volatile organic compounds can be performed with the loop mode.

■ TD-30 Thermal Desorption System



Thermal desorption systems heat samples in a sample tube and then concentrate the thermally desorbed gases before injection into a GC-MS. They are commonly used to measure volatile organic compounds (VOCs) in the atmosphere or measure trace components that are generated from plastic or other samples.

The TD-30R can accommodate 120 samples for excellent processing capacity and offers outstanding expandability, such as functionality for retrapping components or for automatically adding an internal standard substance.

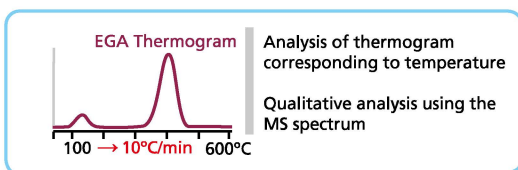
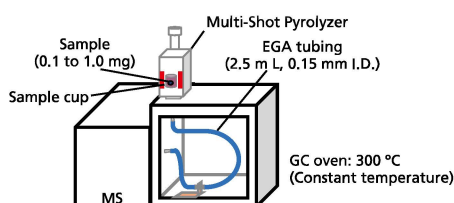


Analysis of Gas Produced by Rubber

Pyrolysis System

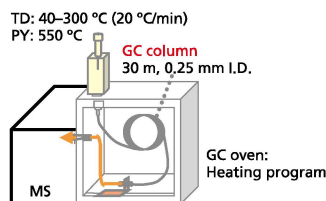


EGA-MS



High molecular compounds are subjected to pyrolysis at temperatures of 500 °C or higher, and the obtained pyrolytic products are analyzed with GC and GC-MS. These pyrolytic products reflect the structure of the original high molecular compounds. Accordingly, they enable the identification and higher order structural analysis of the polymers. Search software utilizing a pyrolysis library assists in the identification.

Single-Shot (Thermal Desorption, TD) Double Shot (Pyrolysis, PY)-GC/MS



Cycle 1: Thermal desorption (TD-GC/MS) - Analysis of additives

Cycle 2: Pyrolysis (PY-GC/MS) - Analysis of resin

Py-Screener™ Phthalate Ester Screening System



The use of phthalate esters is restricted in toys and food packaging, and they are expected to be classified as restricted substances in the RoHS(II) directives. This system is simple to operate, even for novices. It consists of special software to support a series of procedures from sample preparation to data acquisition, data analysis and maintenance, as well as special standard samples and a sampling toolkit.

Sample Preparation Does Not Require Organic Solvents

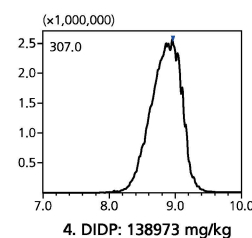
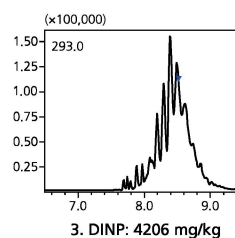
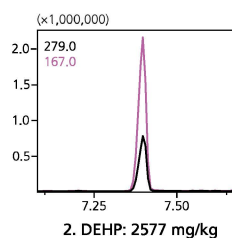
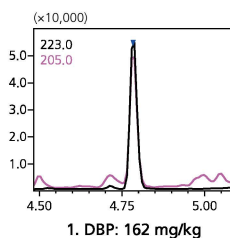
Standard samples and test samples can be prepared without using organic solvents.



Standard Samples Containing
Phthalate Ester for Py-GC/MS



Preparation of Resin Standard Samples



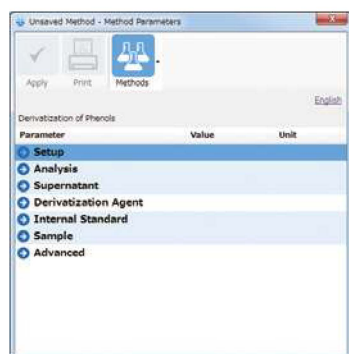
Mass Chromatogram of Compounds Detected When Measuring a PVC Cable

AOC-6000 Plus Multifunctional Autosampler System



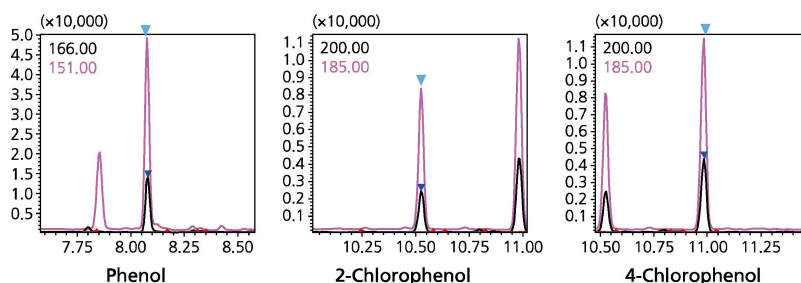
This is compatible with three sample introduction methods: liquid injection, HS (headspace) injection, and SPME (solid-phase microextraction) injection. It can be controlled with GCMSolution software.

The overlap function, which improves the efficiency of continuous analysis, can also be used. Automatic syringe replacement (10 μ L to 1000 μ L) and a stirring function enable sample dilution, the automatic addition of internal standard substances, and the automatic creation of calibration curve samples.



AOC-6000 Plus Control Software

Automatic derivatization analysis of phenols—Standard solution added water (0.0001 mg/L)



GC/MS Off-Flavor Analyzer



Information Registered in Database

Compound Name (E)	Ret. Index 1	Qualitative	Qualitative	Compound (E)	Threshold
Benzophenone	2475	0.0001311	0.471884	Almond, Burnt sugar	10
2,4,6-Trichlorophenol	2502	0.00048	0.01442	Saltiness	100
1-Chlorophenol	2158	0.111895	0.18471	Ground	1000
gamma-Eudesmol	2184	0.000478	0.002853	Sweet, Power, Fruit	1
Chemical structure	202	0.00548	2.23653	0.007	1

Primary odor components

GC/MS analytical conditions

Retention time information

MS and calibration curve information

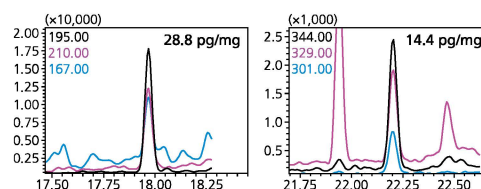
Sensory information of odor components

Odor characteristics

Odor threshold value

This system combines GC-MS with a database of major odor-causing substances and sensory information (types of smells and odor thresholds). It provides the total solution required for off-flavor analysis.

This product was developed in cooperation with Daiwa Can Company.



Mass Chromatogram of 2,4,6-Trichloroanisole (Left) and 2,4,6-Tribromoanisole (Right) in Food Packaging

Check of the Quality of a Smell

Name	Conc	Unit	Threshold	Description
Benzophenone	2.543	pg/mg	10.000	Almond, Burnt sugar
2,4,6-Tribromophenol	2241.933	pg/mg	100.000	Lodoform

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Direct Dial:
E-mail: rmjackson@shimadzu.com

Sales Proposal

Quotation: SSI-289118-Z9F4

Expiration: 9/24/2026

Quote Description:

GCMS-2020 single quadrupole EI/NCI/PCI mass spectrometer with robotic tool changer autosampler for liquid/SHS/DHS/SPME with conditioning station, oil-free dry scroll pump, FID detector, PC/Monitor/Software and all requested libraries
GCMS-8040 triple quadrupole EI/NCI/PCI mass spectrometer with robotic tool changer autosampler for liquid/SHS/DHS/SPME with conditioning station, oil-free dry scroll pump, PC/Monitor/Software and all requested libraries

Proposed Ship Date: 30 Days/ARO

FOB: DESTINATION **Ship Method:** BEST WAY

Shipping Terms: PREPAID

Incoterms: FOB

Additional Information:

Service coverage selections are optioned. Up to 4 years of post-warranty coverage can be purchased to lock in discounted pricing. Installment payments of service contracts are possible.
NEW 3YVP Service also optioned. Three years of FULL Warranty coverage with PM visit during 1st year warranty and Scheduled annual PPM services in years 2 and 3.

For proposal questions or modifications, please contact your sales representative.

For Order Placement:

Reference Quotation Number on Purchase Order and if applicable, attach your current Tax Exempt Certificate to your order request for proper billing.

Please provide the on-site contact name and contact information such as email address or phone number for delivery on the PO.

Please note that state taxes, local taxes and freight, if applicable, will be added at invoicing.
Forward official tax exempt documentation if applicable.

Shimadzu Scientific Instruments
7102 Riverwood Drive, Columbia, MD 21046
Toll Free: 800-477-1227
Local: 410-381-1227 Fax: 410-381-6781
E-mail: customer.service@shimadzu.com

International:
Fax: 410-309-6130
E-mail: icsc@shimadzu.com

Thank you for your interest in Shimadzu Scientific Instruments.

Authorization Signature*



Patrick Fromal

Date: 6/24/2026

*Sales Proposal is not valid without Authorized Signature.

Sales Quotation - please reference the quotation when submitting purchase order.

GCMS SQ NCI

	Product #	Qty	Description	Price Per Unit	Disc't %	Ext'd Price
1	225-44012-42	1	GCMS-QP2020NXNC W/O RP+L 115V	\$98,719.00	50.00%	\$49,359.50
2	220-90649-10	1	GCMS New SQ System Install Kit	\$3,798.00	35.00%	\$2,468.70
3	227-35013-11	1	Installation Consumables Kit for GCMS NX Series	\$646.00	15.00%	\$549.10
4	220-94592-13	1	GCMS Computer, LabSolutions FL Software for GCMS SQ, and Library Kit for Install	\$20,750.00	35.00%	\$13,487.50
5	220-94701-50	1	GCMS Oil-less Rough Pump Kit for Install	\$15,451.00	15.00%	\$13,133.35
6	221-77100-41	1	SPL-2030	\$4,353.00	35.00%	\$2,829.45
7	201-48576-15	1	Tubing, M-Type Female to 1/8", 15cm	\$28.00	0.00%	\$28.00
8	225-10167-91	1	SPL capillary adaptor for GVF ferrule (MS)	\$86.00	0.00%	\$86.00
9	220-90053-01	1	Union, 1/8" Stainless Steel	\$55.00	0.00%	\$55.00
10	221-77200-41	1	FID-2030	\$5,441.00	45.00%	\$2,992.55
11	201-48576-15	2	Tubing, M-Type Female to 1/8", 15cm	\$28.00	0.00%	\$56.00
12	221-73576-15	1	Adapter, LMF to 1/8" Tubing Adapter	\$29.00	0.00%	\$29.00
13	220-94797-06	1	Standards, GC, GC FID/FTD/ECD/BID Sensitivity Test Mix	\$161.00	0.00%	\$161.00
14	220-90053-01	3	Union, 1/8" Stainless Steel	\$55.00	0.00%	\$165.00
15	220-94953-51	1	AOC-6000 Plus RTC 85 LIQ+HS, Standard Model	\$58,937.00	15.00%	\$50,096.45
16	225-31111-06	1	AOC-6000 Agitator Inserts for 10mL vials 6/pk	\$1,049.00	15.00%	\$891.65
17	220-94953-00	1	Mounting Kit, AOC-6000 to GC-2030	\$2,044.00	15.00%	\$1,737.40
18	225-31111-31	1	PAL3-RACK R60	\$1,792.00	15.00%	\$1,523.20
19	223-66141-51	1	(AOC) Instrument control license for AOC-6000/plus in LabSolutions WS/DB/CS	\$3,772.00	15.00%	\$3,206.20
20	223-19390-51	1	(AOC) Instrument control software disk for AOC-6000/plus in LabSolutions; license separate -WS/DB/CS	\$793.00	15.00%	\$674.05
21	220-94928-50	1	Smart SPME Fiber Kit	\$12,402.00	15.00%	\$10,541.70
22	225-31110-37	1	SPME Arrow Conditioning Station	\$8,750.00	15.00%	\$7,437.50
23	227-35359-01	1	Smart Syringe, 2.5mL Headspace, AOC-6000	\$1,108.00	15.00%	\$941.80
24	220-97823-34	2	UPS 4200VA, NXT NPTU4200-O-N, for GCMS and LCMS SQ	\$9,573.00	15.00%	\$16,274.10
25	225-30514-91	1	GC/MS ForensicToxicological Database Ver.2	\$6,865.00	15.00%	\$5,835.25
26	220-94774-00	1	Option (GCMS) - Benzodiazapine library (disk)	\$365.00	15.00%	\$310.25
27	TIER 3 I&F	1	Tier 3 Installation and Customer Familiarization	\$5,580.00	75.00%	\$1,395.00
28	1YW	1	1 YEAR WARRANTY	\$0.00	0.00%	\$0.00

\$272,341.00 \$186,264.70
GCMS TQ 8040 NCI

	Product #	Qty	Description	Price Per Unit	Disc't %	Ext'd Price
29	225-45011-42	1	GCMS-TQ8040NXNC W/O RP+L 115V	\$186,997.00	50.00%	\$93,498.50
30	220-90649-20	1	GCMS New TQ System Install Kit	\$4,431.00	35.00%	\$2,880.15
31	227-35013-11	1	Installation Consumables Kit for GCMS NX Series	\$646.00	15.00%	\$549.10
32	220-94592-14	1	GCMS Computer, Labsolutions FL Software for GCMS TQ, and Library Kit for Install	\$26,715.00	15.00%	\$22,707.75
33	220-94701-50	1	GCMS Oil-less Rough Pump Kit for Install	\$15,451.00	15.00%	\$13,133.35
34	221-77100-41	1	SPL-2030	\$4,353.00	35.00%	\$2,829.45
35	201-48576-15	1	Tubing, M-Type Female to 1/8", 15cm	\$28.00	0.00%	\$28.00
36	225-10167-91	1	SPL capillary adaptor for GVF ferrule (MS)	\$86.00	0.00%	\$86.00
37	220-90053-01	1	Union, 1/8" Stainless Steel	\$55.00	0.00%	\$55.00
38	220-94953-51	1	AOC-6000 Plus RTC 85 LIQ+HS, Standard Model	\$58,937.00	15.00%	\$50,096.45
39	225-31111-06	1	AOC-6000 Agitator Inserts for 10mL vials 6/pk	\$1,049.00	15.00%	\$891.65
40	220-94953-00	1	Mounting Kit, AOC-6000 to GC-2030	\$2,044.00	15.00%	\$1,737.40
41	225-31111-31	1	PAL3-RACK R60	\$1,792.00	15.00%	\$1,523.20
42	223-66141-51	1	(AOC) Instrument control license for AOC-6000/plus in LabSolutions WS/DB/CS	\$3,772.00	35.00%	\$2,451.80
43	223-19390-51	1	(AOC) Instrument control software disk for AOC-6000/plus in LabSolutions; license separate -WS/DB/CS	\$793.00	35.00%	\$515.45
44	220-94928-50	1	Smart SPME Fiber Kit	\$12,402.00	15.00%	\$10,541.70
45	225-31110-37	1	SPME Arrow Conditioning Station	\$8,750.00	15.00%	\$7,437.50
46	227-35359-01	1	Smart Syringe, 2.5mL Headspace, AOC-6000	\$1,108.00	15.00%	\$941.80
47	227-35345-03	1	Smart Fiber, SPME, DVB/C-WR/PDMS 3 pc, AOC-6000	\$971.00	15.00%	\$825.35
48	225-50712-00	1	Gas Filter Kit for He Carrier Gas, Single Baseplate, He-Specific O2/Moisture/Hydrocarbon Filter	\$614.00	15.00%	\$521.90
49	201-52760-01	1	GAS PIPE, CONNECTION MF-MF 1.5 M	\$20.00	0.00%	\$20.00
50	201-48555-50	1	Tubing, GC, MN2-MN2 50mm	\$30.00	0.00%	\$30.00
51	220-97823-34	2	UPS 4200VA, NXT NPTU4200-O-N, for GCMS and LCMS SQ	\$9,573.00	15.00%	\$16,274.10
52	225-45235-91	1	(GCMS) Smart Pesticides Database 2.2 disk - WS/DB	\$2,917.00	15.00%	\$2,479.45
53	225-45245-91	1	(GCMS) Smart Environment Database 1.1 disk - WS/DB	\$3,278.00	15.00%	\$2,786.30
54	TIER 3 I&F	1	Tier 3 Installation and Customer Familiarization	\$5,580.00	75.00%	\$1,395.00
55	1YW	1	1 YEAR WARRANTY	\$0.00	0.00%	\$0.00
56	220-94760-00	1	MAURER, PFLEGER, WEBER GCMS LIBRARY	\$12,430.00	15.00%	\$10,565.50

Company Name: State of West Virginia -Department of
Agriculture
Quote Number: SSI-289118-Z9F4
Activation Date: 6/24/2026
Expiration Date: 9/24/2026

\$374,395.00	\$246,801.85
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Total List Price:	\$646,736.00
Total Line Item Discount:	\$213,669.45
Quote Sub-Total:	\$433,066.55
Estimated Freight:	PREPAID
Total Amount:	\$433,066.55

By placing an Order for any Products related to this Sales Proposal and Quotation, Customer agrees to the terms and conditions at <https://www.ssi.shimadzu.com/terms/General-Terms-Conditions-of-Sale.html>, which are incorporated herein and applicable hereto. SSI reserves the right to update its Terms and Conditions at any time, however the terms and conditions in effect at the date of delivery of Products related to this Sales Proposal and Quotation shall apply to that purchase.

Sales Quotation - please reference the quotation when submitting purchase order.

Optional Items

Optional Items:

GCMS SQ NCI

	Product #	Qty	Description	List Price	Disc't %	Ext'd Price
1	225-31015-91	1	Smart EI/CI Source	\$3,813.00	0.00%	\$3,813.00

GCMS TQ 8040 NCI

	Product #	Qty	Description	List Price	Disc't %	Ext'd Price
2	225-31015-91	1	Smart EI/CI Source	\$3,813.00	15.00%	\$3,241.05

Service Agreement Plans Available

As Quoted

Quantity	Plan Name	Plan Price	Disc't %	Ext'd Price	Products Covered
1	Premium Preventative Maintenance	\$15,440.00	20.00%	\$12,352.00	GCMS-QP2020NXNC W/O RP+L 115V, GCMS-TQ8040NXNC W/O RP+L 115V, SPL-2030, FID-2030, AOC-6000 Plus RTC 85 LIQ +HS, Standard Model
1	Extended Warranty Plus	\$39,760.00	20.00%	\$31,808.00	GCMS-QP2020NXNC W/O RP+L 115V, GCMS-TQ8040NXNC W/O RP+L 115V, SPL-2030, FID-2030, AOC-6000 Plus RTC 85 LIQ +HS, Standard Model
1	Three Year(36 month) Value Plan Service Agreement	\$58,605.00	20.00%	\$46,884.00	GCMS-QP2020NXNC W/O RP+L 115V, GCMS-TQ8040NXNC W/O RP+L 115V, SPL-2030, FID-2030, AOC-6000 Plus RTC 85 LIQ +HS, Standard Model

Descriptions of Service Coverage

Preventative Maintenance

Preventative Maintenance (PM) visits will be scheduled by SSI at the mutual convenience of the buyer and SSI, or performed during any other service visit. PM visits, when provided under this Agreement, may include necessary cleaning, adjustments, verification, lubrication and parts replacement according to the PM checklist. Labor, travel expenses, and selected consumable parts will be included during the PM visit at no additional cost to the buyer.

Premium Preventative Maintenance

Premium Preventative Maintenance visits will be scheduled by SSI at the mutual convenience of the customer and SSI, or performed during any other service visit. This Premium PM will be performed by SSI according to established SSI procedures. Premium PM visits, when performed under this Agreement, will include necessary cleaning, adjustments, verification, lubrication and parts replacement. Labor, travel expenses and selected consumables parts* (list of parts available upon customer request) will be included during the Premium PM visit at no additional cost to the customer. A travel zone fee is added to the agreement to cover travel costs. Purchase of the Premium PM option does not excuse Customer from performing normal daily, weekly or monthly maintenance that may be required.

Extended Warranty

Extended Warranty coverage includes all labor and parts (excluding consumables) necessary to restore the products to operating specifications.

This coverage level is not available for MS products and the associated turbo and roughing pumps. The MS products require a coverage level which includes a Premium PM.

Extended Warranty Plus

A combination of one scheduled Premium PM visit and Extended Warranty Coverage. Premium Preventative Maintenance visits will be scheduled by SSI at the mutual convenience of the customer and SSI, or performed during any other service visit. Premium PM visits, when performed under this Agreement, will include necessary cleaning, adjustments, verification, lubrication and parts replacement. Labor, travel expenses and selected consumables parts* (list of parts available upon customer request) will be included during the Premium PM visit at no additional cost to the customer. The extended Warranty Includes all labor and parts (excluding consumables outside of PM) necessary to restore the products to operating specifications. A travel zone charge is added to the contract to cover travel costs. In the event of a covered product failure, SSI will use its best effort to provide on-demand service.

Premium Total Coverage

This level of agreement provides the customer with a level of coverage includes all labor and non-consumable parts, a Premium PM visit, and in addition provides for the replacement of consumable parts outside of a PM visit at no additional cost to the buyer. Use of this level of Service will be monitored by SSI and in the event that the buyer's use does not exceed two visits during the effective dates of the agreement, the buyer will be entitled to an agreed upon rebate at the end of the agreement term. This rebate must be applied to the purchase of future service agreements or other services offered by SSI.

Three Year Value Plan

Three Year Value Plan Service Agreement:
Following system installation, provides 3 consecutive years of FULL warranty coverage. Customer Care follow-up including PM level service Year1. Scheduled Premium Preventative Maintenance (PPM) on-site service during Year2 and Year3.

Sales Quotation - please reference the quotation when submitting purchase order.

Line Item Descriptions

Product # Description

GCMS SQ NCI

225-44012-42 GCMS-QP2020NXNC W/O RP+L 115V

220-90649-10 GCMS New SQ System Install Kit

GCMS New SQ System Install Kit contains all necessary small parts (i.e. tubing, plug, standard, filters, etc) required to install a new single quad GCMS system.

227-35013-11 Installation Consumables Kit for GCMS NX Series

Convenient kit with all consumables necessary to keep the GCMS operational through the first month of ownership.

Includes 10uL syringe, graphite vespel ferrule (0.4,) 10/pk, graphite vespel ferrule (0.5,) 10/pk, premium green septa, 50pk, deactivated liner with wool for split, 5/pk, deactivated liner with wool for splitless, 5/pk, pre-cleaned O-ring, 10/pk, stainless steel nut, 5/pk. Replacement for 227-35013-01.

220-94592-13 GCMS Computer, LabSolutions FL Software for GCMS SQ, and Library Kit for Install

Includes PC, monitor, LabSolutions GCMS license, LabSolutions GCMS/Insight install DVD and Wiley-NIST mass spectral library.

220-94701-50 GCMS Oil-less Rough Pump Kit for Install

Edwards-nXDS 10i-Dry-Scroll-Pump

221-77100-41 SPL-2030

The split/splitless injection module for the GC 2030 is optimized for narrow-bore (0.25 -0.53 mm) capillary column injections using a patented Linear Velocity control mode; heats from ambient to 450 C. It is easily converted to packed column with PN 220-94680-01.

201-48576-15 Tubing, M-Type Female to 1/8", 15cm

Tubing with MF and 1/8" connections, for connecting metric GC fitting to standard English fitting.

225-10167-91 SPL capillary adaptor for GVF ferrule (MS)

220-90053-01 Union, 1/8" Stainless Steel

Stainless steel 1/8" union for use with all stainless steel tubing and any adapter tubing like MF-1/8"

221-77200-41 FID-2030

The Flame Ionization Detector for the GC-2030 is the most common GC detector and is able to detect almost all organic (carbon-containing) compounds.

201-48576-15 Tubing, M-Type Female to 1/8", 15cm

Tubing with MF and 1/8" connections, for connecting metric GC fitting to standard English fitting.

221-73576-15 Adapter, LMF to 1/8" Tubing Adapter

Tubing with LMF and 1/8" connections, for connecting left-handed metric GC fitting to standard English fitting.

For use with all Hydrogen connections

220-94797-06 Standards, GC, GC FID/FTD/ECD/BID Sensitivity Test Mix

Standard Test Mix

Installation test mix for testing GCs with FID, FTD, ECD or BID.

220-90053-01 Union, 1/8" Stainless Steel

Stainless steel 1/8" union for use with all stainless steel tubing and any adapter tubing like MF-1/8"

220-94953-51 AOC-6000 Plus RTC 85 LIQ+HS, Standard Model

AOC-6000 Plus Robotic Tool Changing system
 85cm autosampler for liquid and headspace injection; automated syringe changing unit

The system consists of one X,Y rail assembly; Z-head unit (carriage and cover), one park station, one 10-uL liquid syringe tool with two SMART syringes, one 2.5-mL headspace syringe tool with two SMART syringes, standard wash/waste station, two tray holders, three VT-54 racks, three VT-15 racks and an agitator. An R60 rack included as managed item. AOC-6000 control software must be added depending on the acquisition software.

225-31111-06 AOC-6000 Agitator Inserts for 10mL vials 6/pk

Set of 6x inserts for the Agitator to place 10mL vials instead of the 20mL vials

220-94953-00 Mounting Kit, AOC-6000 to GC-2030

225-31111-31 PAL3-RACK R60

Aluminum Sample Rack with 60 slots for 10/20mL headspace vials.
 Vials not included.

223-66141-51 (AOC) Instrument control license for AOC-6000/plus in LabSolutions WS/DB/CS

This is an electronic license for control of one AOC-6000/6000plus in LabSolutions WS/DB/CS.

Not supported for use with AOC-5000 or AOC-5000xt.

223-19390-51 (AOC) Instrument control software disk for AOC-6000/plus in LabSolutions; license separate -WS/DB/CS

This is the installer for AOC-6000/6000 plus control software, for AOC control in LabSolutions software.

AOC license also required 223-66141-51.

Not supported for use with AOC-5000 or AOC-5000xt.
 Supported LabSolutions versions
 LabSolutions LC/GC ver. 5.87 or later
 LabSolutions DB/CS ver. 6.71 or later
 Windows OS operation
 Windows 7 Pro 32bit SP1 or later
 Windows 7 Pro 64bit SP1 or later
 Windows 10 32bit/64bit or later
 Instrument controlled
 AOC-6000 Plus (entry, standard, high-end),
 ROM: Ver. 3.1.6.2 (build 3.1.20049.1010) or later (version 2.00 and up)
 AOC-6000 (entry, standard, high-end),
 ROM: Ver. 2.2.8 (build 2.2.16067.1330) or later (version 1.00 and up)

220-94928-50 Smart SPME Fiber Kit

Smart SPME fiber kit, consisting of:
 1 pc SPME Tool
 1 pc Smart SPME Fiber Assortment Kit (SFIB-SEL5-S2)
 1 pc SPME Performance Evaluation Mix

Smart SPME fiber kit, consisting of:
 1 pc SPME Tool
 1 pc Smart SPME Fiber Assortment Kit (SFIB-SEL5-S2)
 1 pc SPME Performance Evaluation Mix

225-31110-37 SPME Arrow Conditioning Station

The AOC-6000 SPME Arrow conditioning station is a heated port where the SPME Arrow or fiber can be conditioned.

227-35359-01 Smart Syringe, 2.5mL Headspace, AOC-6000

Smart Syringe, 2.5mL Headspace, AOC-6000 can be used with AOC-6000 and AOC-6000Plus

2.5mL HS Syringe, 57mm needle length, 23 guage with a PTFE Plunger

220-97823-34 UPS 4200VA, NXT NPTU4200-O-N, for GCMS and LCMS SQ

Double-conversion true sine wave output, IGBT rectifier and inverter with internal isolation transformer and manual bypass.

Voltage (VAC) 208
 Voltage Range (VAC) 176 – 275
 Frequency (Hz) 60
 Connection NEMA L6-30P Plug
 Rated Current (A) 24
 Receptacles: (8) NEMA 5-20R (1) NEMA L6-20R, (1) NEMA L6-15R

225-30514-91 GC/MS ForensicToxicological Database Ver.2

This product can be used for GCMS-SQ and TQ series. In Ver. 2, the number of compounds in the database has been increased from 1012 to 2210, and includes information for compounds where standard samples are difficult to obtain, such as commonly abused drugs and drugs linked to deliberate poisonings. This database therefore provides total support for toxicological analysis with GC-MS.

220-94774-00 Option (GCMS) - Benzodiazepine library (disk)

BENZODIAZEPINE LIBRARY

TIER 3 I&F Tier 3 Installation and Customer Familiarization
1YW 1 YEAR WARRANTY

1 YEAR WARRANTY

1 YEAR WARRANTY

GCMS TQ 8040 NCI

225-45011-42 GCMS-TQ8040NXNC W/O RP+L 115V
220-90649-20 GCMS New TQ System Install Kit

GCMS New TQ System Install Kit contains all necessary small parts (i.e. tubing, plug, standard, filters, etc) required to install a new triple quad GCMS system.

227-35013-11 Installation Consumables Kit for GCMS NX Series

Convenient kit with all consumables necessary to keep the GCMS operational through the first month of ownership.

Includes 10uL syringe, graphite vespel ferrule (0.4,) 10/pk, graphite vespel ferrule (0.5,) 10/pk, premium green septa, 50pk, deactivated liner with wool for split, 5/pk, deactivated liner with wool for splitless, 5/pk, pre-cleaned O-ring, 10/pk, stainless steel nut, 5/pk. Replacement for 227-35013-01.

220-94592-14 GCMS Computer, Labsolutions FL Software for GCMS TQ, and Library Kit for Install
220-94701-50 GCMS Oil-less Rough Pump Kit for Install

Edwards-nXDS 10i-Dry-Scroll-Pump

221-77100-41 SPL-2030

The split/splitless injection module for the GC 2030 is optimized for narrow-bore (0.25 -0.53 mm) capillary column injections using a patented Linear Velocity control mode; heats from ambient to 450 C. It is easily converted to packed column with PN 220-94680-01.

201-48576-15 Tubing, M-Type Female to 1/8", 15cm

Tubing with MF and 1/8" connections, for connecting metric GC fitting to standard English fitting.

225-10167-91 SPL capillary adaptor for GVF ferrule (MS)
220-90053-01 Union, 1/8" Stainless Steel

Stainless steel 1/8" union for use with all stainless steel tubing and any adapter tubing like MF-1/8"

220-94953-51 AOC-6000 Plus RTC 85 LIQ+HS, Standard Model

AOC-6000 Plus Robotic Tool Changing system
 85cm autosampler for liquid and headspace injection; automated syringe changing unit

The system consists of one X,Y rail assembly; Z-head unit (carriage and cover), one park station, one 10-uL liquid syringe tool with two SMART syringes, one 2.5-mL headspace syringe tool with two SMART syringes, standard wash/waste station, two tray holders, three VT-54 racks, three VT-15 racks and an agitator. An R60 rack included as managed item. AOC-6000 control software must be added depending on the acquisition software.

- 225-31111-06 AOC-6000 Agitator Inserts for 10mL vials 6/pk**
 Set of 6x inserts for the Agitator to place 10mL vials instead of the 20mL vials
- 220-94953-00 Mounting Kit, AOC-6000 to GC-2030**
- 225-31111-31 PAL3-RACK R60**
 Aluminum Sample Rack with 60 slots for 10/20mL headspace vials.
 Vials not included.
- 223-66141-51 (AOC) Instrument control license for AOC-6000/plus in LabSolutions WS/DB/CS**
 This is an electronic license for control of one AOC-6000/6000plus in LabSolutions WS/DB/CS.
 Not supported for use with AOC-5000 or AOC-5000xt.
- 223-19390-51 (AOC) Instrument control software disk for AOC-6000/plus in LabSolutions; license separate -WS/DB/CS**
 This is the installer for AOC-6000/6000 plus control software, for AOC control in LabSolutions software.
 AOC license also required 223-66141-51.
 Not supported for use with AOC-5000 or AOC-5000xt.
 Supported LabSolutions versions
 LabSolutions LC/GC ver. 5.87 or later
 LabSolutions DB/CS ver. 6.71 or later
 Windows OS operation
 Windows 7 Pro 32bit SP1 or later
 Windows 7 Pro 64bit SP1 or later
 Windows 10 32bit/64bit or later
 Instrument controlled
 AOC-6000 Plus (entry, standard, high-end),
 ROM: Ver. 3.1.6.2 (build 3.1.20049.1010) or later (version 2.00 and up)
 AOC-6000 (entry, standard, high-end),
 ROM: Ver. 2.2.8 (build 2.2.16067.1330) or later (version 1.00 and up)
- 220-94928-50 Smart SPME Fiber Kit**
 Smart SPME fiber kit, consisting of:
 1 pc SPME Tool
 1 pc Smart SPME Fiber Assortment Kit (SFIB-SEL5-S2)
 1 pc SPME Performance Evaluation Mix
 Smart SPME fiber kit, consisting of:
 1 pc SPME Tool
 1 pc Smart SPME Fiber Assortment Kit (SFIB-SEL5-S2)
 1 pc SPME Performance Evaluation Mix
- 225-31110-37 SPME Arrow Conditioning Station**
 The AOC-6000 SPME Arrow conditioning station is a heated port where the SPME Arrow or fiber can be conditioned.
- 227-35359-01 Smart Syringe, 2.5mL Headspace, AOC-6000**
 Smart Syringe, 2.5mL Headspace, AOC-6000 can be used with AOC-6000 and AOC-6000Plus
 2.5mL HS Syringe, 57mm needle length, 23 guage with a PTFE Plunger
- 227-35345-03 Smart Fiber, SPME, DVB/C-WR/PDMS 3 pc, AOC-6000**
 Smart SPME Fiber DVB/C-WR/PDMS, 3 pcs
 Smart SPME Fiber DVB/C-WR/PDMS, 3 pcs
- 225-50712-00 Gas Filter Kit for He Carrier Gas, Single Baseplate, He-Specific O2/Moisture/Hydrocarbon Filter**
 Includes 1-position baseplate with 1/8" stainless steel inlet fitting and M-type outlet fitting, and 1 He-specific oxygen/moisture/hydrocarbon trap.
- 201-52760-01 GAS PIPE, CONNECTION MF-MF 1.5 M**
- 201-48555-50 Tubing, GC, MN2-MN2 50mm**

220-97823-34 UPS 4200VA, NXT NPTU4200-O-N, for GCMS and LCMS SQ

Double-conversion true sine wave output, IGBT rectifier and inverter with internal isolation transformer and manual bypass.

Voltage (VAC) 208
 Voltage Range (VAC) 176 – 275
 Frequency (Hz) 60
 Connection NEMA L6-30P Plug
 Rated Current (A) 24
 Receptacles: (8) NEMA 5-20R (1) NEMA L6-20R, (1) NEMA L6-15R

225-45235-91 (GCMS) Smart Pesticides Database 2.2 disk - WS/DB

This product can be used for GCMS-SQ and TQ series. The Smart Pesticides Database version 2.2 the number of registered compounds has increased from 480 to 530. Introduce this database to customers such as institutes for health, health centers, food manufacturers, restaurant chains for residual pesticides in foods.

This product consists of an instruction manual and a CD-ROM containing method files, database files, and an instruction video.

This product can be used in GCMS-SQ and TQ series. This product can only be installed on one Shimadzu GC/MS (/MS) system. If customers wish to use this product on two or more systems, they must purchase the corresponding number of this product. The database comes in Excel format, so prepare Excel 2019 (32-bit or 64-bit version), or Excel 2021 (32-bit or 64-bit version).

In Ver. 2, the number of registered compounds has been increased from 480 to 530 by supporting standard mixtures outside Japan. Furthermore, retention indices are registered for all the components, enabling easy updating of retention times via the AART (Automatic Adjustment of Retention Time) function. Analysis by the internal standard method is also supported, since information is registered for compounds that can be used as internal standard substances. This product consists of an instruction manual and a CD-ROM containing method files, database files, and an instruction video.

The library can be used on both LabSolutions GCMS and GCMSsolution. When using with GCMSsolution, GCMSsolution Ver. 4.44 or later is required (if using with Excel 64-bit, Ver.4.53SP1 or later is required). When using with LabSolutions DB/CS, LabSolutions Ver.6.116 or later is required.

225-45245-91 (GCMS) Smart Environment Database 1.1 disk - WS/DB

This product can only be used for GCMS-TQ series. Smart Environmental Database contains the information required for MRM analysis, and is registered with 527 components including stable isotope labeled compounds. By using the database in combination with Smart MRM, a method creation function in GCMSsolution or LabSolutions GCMS, users can automatically create multicomponent batch analysis methods easily and appropriately, reducing complicated analysis preparations prior to creating calibration curves. This product can only be used for GCMS-TQ series.

The product consists of a user manual and a CD-ROM that contains method files and database file.

The product can only be used with GCMS-TQ series. It cannot be used with GCMS-QP series.

The product can only be installed on one Shimadzu GC/MS system. If the customer would like to install the database on two or more systems, arrange for them to purchase the appropriate number of products.

Microsoft Excel is required to run this database. Please prepare Excel described below. Product name: Microsoft Excel 2019 (32-bit, 64-bit), or Excel 2021 (32-bit, 64-bit) Vendor: Microsoft (<http://www.microsoft.com/en-us/default.aspx>)

The library can be used on both LabSolutions GCMS and GCMSsolution. When using with GCMSsolution, GCMSsolution Ver. 4.30 or later is required (if using with Excel 64-bit, Ver.4.53SP1 or later is required). When using with LabSolutions DB/CS, LabSolutions Ver.6.116 or later is required.

TIER 3 I&F Tier 3 Installation and Customer Familiarization
1YW 1 YEAR WARRANTY

1 YEAR WARRANTY

1 YEAR WARRANTY

220-94760-00 MAURER, PFLEGER, WEBER GCMS LIBRARY

Maurer, Pfleger, Weber (MPW) Library of Drugs, Poisons, Pesticides, Pollutants and their Metabolites 2011 is the world's most comprehensive reference for scientists wishing to keep pace with recent developments in clinical and forensic toxicology. The MPW Library, Edition 2011, consists of 9000 compounds, including novel therapeutics, designer drugs, herbal drugs, AIDS therapeutics, and 5,200 metabolites. All substances are classified according to their toxicological categories.

Information within the library includes compound names, chemical structure, molecular mass, retention index, CAS registry number, and major pharmacological category.

Optional Item Descriptions

Product #	Description
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GCMS SQ NCI

225-31015-91 Smart EI/CI Source

GCMS TQ 8040 NCI

225-31015-91 Smart EI/CI Source