C00G-E005N

SHIMADZU
Excellence in Science

Analytical & Measuring Instruments

Pocket Reference

SHIMADZU

Analytical & Measuring Instruments

Introducing powerful performance for the world.

SHIMADZU
Excellence in Science

Continuing pursuit of technological excellence

For more than 145 years, Shimadzu Corporation has been committed to commercializing cutting-edge technology and providing it to customers in a wide array of industries. Our brand statement, "Excellence in Science", stands for our desire and attitude to diligently respond to customer requirements by offering worldclass technologies essential for Research & Development, process and quality control in a variety of market segments such as food, beverages and agriculture; pharmaceutical; clinical; environmental; automotive; chemical, petrochemical, biofuel and energy, plastics and rubber.

In this ever-changing landscape of industries and increasingly intense, globally competitive environment, Shimadzu aims to partner with customers to meet their needs with unique technologies and solutions.

For over 50 years, Shimadzu has been represented in Europe. The headquarters are based in Duisburg, Germany. Today, the company's large European network with subsidiaries, offices and trade partners in 81 cities in 47 countries guarantee close proximity to customers, markets, trends and developments.

Shimadzu's analytical instruments are used in consumer, patient and environmental protection applications as well as product safety. Pushing analytical limits, the company's European Innovation Center (EuIC) approach combines academic-scientific know-how from universities with Shimadzu's technological expertise to provide even more customer-focused service on the next level and to create new solutions for tomorrow. Opinion leaders, strategic thinkers and scientific experts from universities all over Europe are integral part of the EuIC.

Introducing our new products

Q-TOF LCMS

LCMS-8060NX

Nexis GC-2030

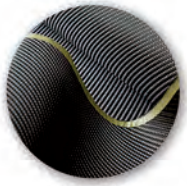
GCMS-TQ8050 NX

i-Series

Nexera Series

IRSpirit

Shimadzu Markets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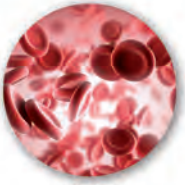
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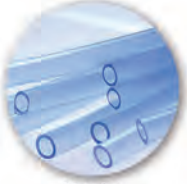
Chemical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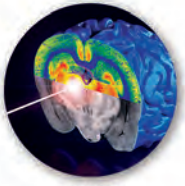

Imaging


Food


Pharmaceutical


Automotive


Environment

Quality

means the best. It is apparent in the details. And in our employees. Both contribute to your added value.

Sustainability

means creating technologies that are compatible with our lives, our values and with nature. This will secure our future.

Contents

Chromatographs

Chromatography is the standard analytical separation technology used for quantitative analysis. Ever since Shimadzu developed its first gas chromatograph in 1956, we have continued to broaden our chromatography lineup by providing liquid chromatographs and systems combined with mass spectrometers. Meanwhile, we have developed a variety of application-specific systems designed for customers in the pharmaceutical, environmental, food products and petrochemical industries.

Shimadzu also provides data processing and data management software to actively help customers to comply with various regulatory requirements, including GxP and FDA 21 CFR Part 11.

HPLC/UHPLC | **SFC** | **LC-MS/MS** | **LC-MS**

GC | **GC-MS/MS** | **GC-MS** | **Chromatography Consumables**

New Industry Standard HPLC

HPLC systems are able to quantitatively analyze substances in mixtures containing multiple ingredients by separating and detecting target substances. They are also able to purify specific substances once they are separated. The Nexera series modular HPLC can be configured to create the optimal system for specific customer applications.

The advanced i-Series integrated HPLC systems are intelligent analyzers aimed at large labs requiring high throughput operation (i.e. pharmaceuticals, CROs, chemical, food and environmental labs) as well as small labs which cannot afford dedicated operators. Introduction of the i-Series enables customers to improve productivity of their operation such as R&D, quality control and safety testing while minimizing operator workload, cost of ownership and environmental impact.

Products

- Nexera Series (Modular HPLC)
- LC-2050 i-Series (integrated HPLC)
- LC-2060 i-Series (integrated UHPLC)
- Shim-pack LC Columns

ANALYTICAL INTELLIGENCE

HPLC Systems

Applications
Pharmaceuticals
Food & Beverage
Environmental
Biotechnology
Chemicals

Ultra High Performance Liquid Chromatograph (UHPLC)

UHPLC systems are able to quantitatively analyze substances in mixtures containing multiple ingredients by separating and detecting target substances. The Nexera series of modular UHPLC systems can be configured to create the optimal system for specific customer applications.

Advanced AI capabilities have been incorporated to allow the equipment to detect and resolve issues automatically. Lab management has been integrated using the Internet of Things (IoT) and device networking, making it simple to review instrument status and optimize resource allocation.

Shimadzu also offers a wide variety of other application-specific systems such as automated sample pretreatment systems for quantitation of metabolites contained in pharmaceuticals or biological samples, sample preparation and analysis of residual pesticides and systems for determination of organic and amino acids.

Products

- Nexera XR, XS, X3
- Nexera Method Scouting
- Nexera XS inert
- Shim-pack UHPLC Columns

Nexera series

ANALYTICAL INTELLIGENCE

Applications
Pharmaceuticals
Food & Beverage
Environmental
Biotechnology
Chemicals
Academia

Integrated LC for Simplified Method Transfer

HPLC systems are able to quantitatively analyze substances in mixtures containing multiple ingredients by separating and detecting target substances.

The advanced i-Series Method Transfer System is based on the very successful i-Series platform of integrated UHPLC systems (LC-2060). The instrument features two analytical flow lines with different system volumes in a single compact integrated LC. By switching automatically between the pathways, the i-Series MT performs both HPLC and UHPLC analyses seamlessly, preserving the relative separation pattern by compensating automatically for differences in system volume. Consequently, the i-Series MT achieves exceptional analytical reproducibility when switching from large to small volume systems or vice-versa. The same technology also allows the i-Series MT to match any existing HPLC or UHPLC method run on competitive instrument platforms, eliminating the need to consider and carefully match plumbing to achieve identical system volumes between instruments.

Products

- Nexera-i MT

ANALYTICAL INTELLIGENCE

i-Series MT

Applications
Pharmaceuticals
Food & Beverage
Environmental
Biotechnology
Chemicals

HIC-ESP ion chromatograph

The new HIC-ESP ion chromatograph features the same low carry-over and excellent injection precision characteristics of Shimadzu HPLCs to ensure highly reliable results in quantitative ion analysis.

The newly developed, low-volume anion suppressor minimizes band spreading to achieve the highest sensitivity, providing stable functionality even over long periods of use, while the system's small footprint offers more efficient use of laboratory bench space. High sensitivity, reliability, and robustness is achieved through use of the new ICDS-40A anion suppressor.

Products

- HIC-ESP ion chromatograph
- ICDS-40A anion suppressor

HIC-ESP

Applications
Pharmaceuticals
Food & Beverage
Environmental
Chemicals

Nexera XS inert

The potential adsorption of an analyte onto metal surfaces of UHPLC instruments poses some critical challenges when analyzing biomolecules. The Nexera XS inert system offers an ideal solution, by combining the elevated pressure tolerance of a UHPLC system with complete inertness of the sample flow path. This is ensured by the absence of metal on the wetted surface and offering ultra-high resistance to corrosion, even when mobile phases with high salt concentrations and extreme pH values are being used. In the case of ion-exchange or size-exclusion chromatography used for the analysis of proteins or other biomolecules, the mobile phase pH can strongly affect chromatographic separation. The pH monitor pHM-40 continuously monitors the pH of mobile phases to identify any changes in mobile phase pH in real time.

Products

- Nexera XS inert UHPLC
- pHM-40 pH Monitor
- Shim-pack Scepter metal-free Columns

Nexera XS inert

Applications
Pharmaceuticals
Food & Beverage
Environmental
Chemicals

Method Development Solution

LabSolutions MD software supports method development according to Analytical Quality by Design (AQbD) principles. In combination with the Nexera UHPLC Method Scouting System, it offers a graphical user interface to simplify the system set-up, as well as automated batch creation, to provide reliable data while minimizing the risk of human error. It enables screening of a variety of different mobile phases and separation columns to rapidly identify a suitable combination. LabSolutions MD can then create a multifactorial experimental design, where using only limited input data, the software is able to determine optimum separation conditions within the design space. Accurate retention modelling allows an estimation of method robustness in minimal time.

This setup provides an all-round solution for highly effective HPLC method development and implementation in a wide range of application fields, including pharmaceutical CMC and drug development/synthesis.

Products

- Nexera Method Scouting System
- i-Series Method Scouting System
- LabSolutions MD
- Shim-pack UHPLC Columns

LabSolutions MD

Applications
Pharmaceuticals
Food & Beverage
Environmental
Biotechnology
Chemicals

Preparative Purification System (HPLC)

HPLC is used to separate and refine high-purity target compounds from a mixed solution after a synthesis reaction or from natural extracts. A preparative HPLC system must offer different capabilities from an analytical HPLC system. It is used to fraction high-purity compounds required for subsequent evaluation, analysis, and processing in the shortest possible time. The Nexera series of modular preparative HPLC systems can be configured to create the optimal system for specific customer applications. Nexera prep in combination with LabSolutions software offers a simple preparative workflow and scale-up by simulation for optimization of method parameters. Various column chemistries are available in analytical and preparative scale for simple method scale-up, and post-processing purification can be automated by using the UFPLC system set-up (Ultra-Fast Purification Liquid Chromatograph). The system is expandable according to costumer requirements, such as recovery volume and number of fractions. Fractionation can be triggered by various detector signals, most suitable to the target compound.

Products

- Nexera prep
- UFPLC
- Preparative LCMS
- Shim-pack preparative HPLC columns

Nexera Prep

Applications
Pharmaceuticals
Food & Beverage
Biotechnology
Chemicals

Supercritical Fluid Chromatography

Supercritical fluid chromatography (SFC) using a mobile phase having both liquid and gas-like properties offers an interesting alternative to conventional HPLC in terms of selectivity and separation behavior. Especially for separation of chiral compounds, SFC has frequently been shown to be the method of choice. It can also generate up to 5 times the linear velocity of RP-LC, while reducing the amount of organic solvent consumption. The Nexera UC allows measurements either by liquid chromatography (LC) or supercritical fluid chromatography (SFC) on a single system. Switching between SFC and LC permits rapid screening for optimum separation conditions, resulting in improved analytical efficiency. Existing Shimadzu (U)HPLC systems can easily be upgraded to build a Nexera UC, offering a full SFC/UHPLC setup while saving acquisition costs as well as lab space. The Nexera UC unified chromatography system is the world's first-ever unified and fully automated instrument combining supercritical fluid extraction (SFE) with supercritical fluid chromatography (SFC). The SFE-SFC-MS platform merges quick and easy online sample preparation with advanced chromatographic analysis and high sensitivity detection. This state-of-the-art system serves a wide range of applications, e.g. monitoring of pesticides in food products, additives in polymers, drug discovery in pharmaceuticals and biopharmaceuticals and environmental controls or cleaning validation.

Products

- Nexera UC
- Shim-pack UC Columns for SFC

Nexera UC

Applications
Food
Flavor & Fragrance
Polymers
Environmental
Metabolomics

Semi-preparative Supercritical Fluid Chromatography system

Designed in collaboration with the Enabling Technologies Consortium, the award-winning Nexera UC Prep SFC is a next-generation solution to the demand for efficient and robust semi-prep SFC purification in the pharmaceutical, chemical and food industries. Its flexible system configuration in a compact design allows users to overhaul their workflow, reduce inefficiencies and meet a wide range of purification requirements. High recovery rates are achieved through the patented "LotusStream" gas-liquid separator technology. It maximizes lab resources with its compact design, green technology, and fast dry down times.

The Nexera UC prep supports streamlined processes while fitting into pre-existing workflows with the easy-to-use "Prep Solution" software.

Products

- Nexera UC prep
- Shim-pack UC preparative SFC Columns

Nexera UC Prep

Applications
Pharmaceuticals
Food & Beverage
Chemicals

Analytical Intelligence

Analytical Intelligence is the collective term for a series of new automated support functions utilizing smart sensor technology and device networking, IoT, and Artificial Intelligence features, that enable higher productivity and maximum reliability of analytical instrumentation. It allows a system to monitor and diagnose itself, handle technical issues during data acquisition without user input, and automatically behave as if it were operated by an expert.

Analytical Intelligence supports the acquisition of high-quality, reproducible data regardless of an operator's skill level for both routine and demanding applications.

Products

- Nexera series
- i-Series
- Nexis SCD-2030
- UV-i Selection
- LCMS-8060NX
- ELSD-LT III
- AOC-30 Series

Applications
Pharmaceuticals
Food & Beverage
Environmental
Biotechnology
Chemicals

Liquid Chromatograph Mass Spectrometer

Building an LC-MS system that employs an MS as an LC detector can effectively reduce the limitations of LC analysis. The qualification performance of spectrometers is useful for detecting impurities in overlapped peaks. The LCMS-SQ allows highspeed mass analysis of sharp chromatographic peaks obtained by UHPLC with excellent sensitivity and repeatability. Innovative ion optics with the newly developed Qarray™ ion optical system provide superior sensitivity, repeatability and linearity, achieving 50 % to 300 % greater sensitivity than any other single quadrupole analyzer for substances most commonly measured.

UFswitching technology (Patent: US7855355) enables switching between positive and negative ion modes in 15 milliseconds or less, so even the fastest LC peaks can be analyzed in both modes, thus increasing productivity.

Products

- LCMS-2020
- LCMS-2050
- DUIS Source for 2020 (Optional)
- APCI Source for 2020 (Optional)
- DART Source for 2020 (Optional)
- ASAP Source for 2020 (Optional)
- Shim-pack Columns for LC-MS
- DPiMS-2020

LCMS-SQ

Applications
Pharmaceuticals
Food & Beverage
Environmental
Biotechnology

Triple Quadrupole Liquid Chromatograph Mass Spectrometer

Incorporating Shimadzu's proprietary ultrafast technologies (UF Technologies), the new triple quadrupole LCMS-8060NX dramatically improves analytical throughput with the ultimate in high-speed performance. These features include ultrafast polarity switching (5 msec), an ultra-high-speed scan rate of 30,000 u/sec and up to 555 MRMs/sec. In addition, a newly developed IonFocus ion source and Q-Array boosts ion intensity while suppressing noise. By improving the ion sampling device, the ion guide and vacuum efficiency, Shimadzu has achieved an unprecedented sensitivity in LCMS.

Combine with Shimadzu's world-leading UHPLC systems for an unmatched level of performance.

Products

- LCMS-8040/8045/8050/8060/8060NX (RUO)
- LCMS-8045/8050/8060/8060NX (IVD)
- APCI Source (Optional)
- DUIS Source (Optional)
- PESI Source (Optional)
- Upgrade 8060 to 8060NX (Optional)
- SICRIT Ion Source (Optional)

LCMS-8060NX

Applications
Pharmaceuticals
Food & Beverage
Environmental
Biotechnology
Chemicals

LC-MS/MS Solution System Packages

Shimadzu offers method packages that include pre-optimized MRM transitions for quantitative and reference ions, LC separation parameters, retention times for each compound, peak identification parameters and report templates for outputting of results. Use of a method package simplifies the laboratory method development process. Used in combination with the LabSolutions LCMS quantitation browser, multicomponent analysis is made easy. Quantitation curves and compound results occur simultaneously.

The user can easily review numerous analytes in several files, and all quantitation changes are updated concurrently in real time.

Products

- LC-MS/MS Method Package for Cell Culture Profiling / Drugs of Abuse / Water Quality Analysis / Veterinary Drugs / Residual Pesticides / Lipid Mediators / Primary Metabolites / Short Chain Fatty Acids / Nucleosides / Triglycerides / PFAS
- LC-MS/MS Rapid Toxicology Screening System Ver. 2
- LC-MS/MS MRM Library for Metabolic Enzymes in Yeast

LC-MS/MS Solution System Packages

Applications
Metabolomics
Lipidomics
Forensics and Toxicology
Residual Pesticides
Cell Culture Profiling
Water Quality Analysis
Veterinary Drugs

HRMS High Resolution Mass Spectrometry

Shimadzu is offering a range of High Resolution Mass Spectrometers based on Time-of-Flight (TOF) technology.

Shimadzu offers Q-TOF combining robust mass accuracy and high resolution thus making it an ideal tool for routine qualitative/quantitative workflow.

Products

- Q-TOF LCMS-9030
- Q-TOF LCMS-9050
- HESI/APCI
- APCI Ion Source
- microESI Source
- SICRIT Ion Source
- MALDI Ion Source

Q-TOF LCMS-9030

Applications
Metabolomics
Proteomics
Small molecules
Biopharma
Natural Substances

Gas Chromatograph

Gas chromatography is a well-established technique for separation of complex samples and quantification of the single constituents. Determination of concentration in unknown samples is performed by comparison with standard measurements. Precision of the GC is therefore crucial for accuracy and reliability of the results. With "The Next Industry Standard" Nexis GC-2030 Shimadzu combines world-class precision with best in class detector sensitivity for FID and BID detector. Smart devices such as the new color touchscreen display offer fast and intuitive access to the Nexis GC-2030. Exchange of consumables requires no tools, including column exchange using the unique Click Tek technique. Furthermore, an optional oven light supports maintenance inside the GC oven. Advanced flow technology provides access to sophisticated chromatographic techniques. Integrated modules such as multidimensional chromatography improve chromatographic separation or enhance sample throughput (e.g. with backflush, detector splitting or switching). By free adjustment of sampling frequency and filter time constant, Nexis GC-2030 enables fine tuning of all detectors for fastest response, highest sensitivity and best reproducibility.

Products

- Nexis GC-2030
- AOC-30 series
- AOC-6000 Plus
- HS-10/HS-10/20 Series (Headspace sampler)
- SH-GC Capillary Columnssampler)
- Integrated hydrogen sensor for safe operation with hydrogen as carrier gas
- LabSolutions family
- Empower Version 2/3

Nexis GC-2030

Applications
Chemical
Food & Beverage
Environmental
Pharmaceutical

Sulfur Chemiluminescence Detector

Sulfur Chemiluminescence Detectors are the perfect choice for highly sensitive sulfur measurements, e.g. to protect catalysts in the hydrocarbon processing industry. With the new Nexis SCD-2030, Shimadzu combines latest technologies with an optimum design built from scratch. This adds a wealth of automation functions to simplify operation and maintenance relieve the operators from complex handling procedures and allows the analysis of highly complex matrices showing total sulfur content as well as individual sulfur components.

The Nexis SCD-2030 supports easier operation and workflow through automated functions and guidance through method development based on smart software applications. This allows agile usability in a broad range of industries.

Furthermore the Nexis SCD-2030 provides excellent analysis features such as long-term stability, reliability and reduced need for calibration.

Products

- Nexis SCD-2030

Nexis SCD-2030

Applications
Chemical
Petrochemical
Biofuel
Energy

Energy-Saving Capillary Gas Chromatograph

Shimadzu's new-generation GC-2025 capillary gas chromatograph minimizes environmental impact by reducing power and carrier gas consumption while retaining the performance capabilities required for capillary analysis.

The GC-2025 incorporates a digital flow controller that controls both the carrier and detector gases and a newly designed energy-saving column oven that features small volume and less heating loss, achieving a dramatic reduction in operation costs. The compact GC-2025 is the gas chromatograph for environmentally friendly, high value performance.

Products

- GC-2025 (Capillary GC)
- AOC-20 Series (Automatic liquid sample injection system) (Optional)
- CRG-2025 (Low temperature control solenoid valve) (Optional)
- SH-GC Capillary Columns

GC-2025

Applications
Chemical
Environmental
Food & Beverage
Academia

Triple Quadrupole Gas Chromatograph Mass Spectrometer

The GCMS-TQ8050 offers a new level of performance for high-throughput, sensitivity and easy operation for simultaneous multi-components analysis in the fields of residual pesticide in food, environment, metabolomics and forensics. The GCMS-TQ8050 incorporates new Ultra Fast technologies. The UF-MRM enables up to 32,000 MRM transitions in a single analysis. The Smart MRM provides automation for creation of MRM measurement methods for each compound. Higher sensitivity and enhanced selectivity are reached by incorporating Shimadzu's proprietary high-efficiency OFF-AXIS ion optics, overdrive lenses that reduce neutral noise, and a variety of measurement modes. In addition, this system offers exceptional speed. Fast Scan/MRM measurements provide a wealth of qualitative and quantitative information while a number of features including the AART function, Easy sTop injection port and front-opening ion source chamber ensure a user-friendly operating environment.

Products

- GCMS-TQ8050, GCMS-TQ8040, available models: EI, EI/CI/NCI
- Smart MRM Database series
- AOC-20i (Autoinjector)
- HS-20 Series (Headspace sampler)
- AOC-6000 (Robotic tool changer, liquid, headspace, SPME, ITEX, SPME Arrow)
- SH-Columns for GC-MS

GCMS-TQ8050 NX

Applications
Food Testing
Environmental
Forensics
Metaboloics
Life Science

Gas Chromatograph Mass Spectrometer

Shimadzu offers a broad range of solutions based on quadrupole GCMS which contribute to increased sensitivity and higher productivity in the laboratory. With best-in-class scanning speed and patented advanced scanning speed protocol (ASSP), they ensure sensitivity improvement at high-speed data scanning, leading to shorter analysis time and increasing overall efficiency. Library search using Linear Retention Indices and Automatic Adjustment of Retention Times (AART) makes identification easy and reliable. In addition to EI, PCI and NCI ionization mode, Shimadzu also offers a direct sample introduction system (DI) as an option. A broad range of accessories including a Thermal desorption system (TD-30), the AOC-6000 autosampler for liquid headspace and SPME injection as well as a cooled PTV (temperature programmable injector) (OPTIC-4), a Pyrolyzer (Py-3030) and Shimadzu Advanced Flow Technologies for Heart-Cut GC/GCMS are available.

Products

- GCMS-QP2020, available models: EI, EI/CI, EI/CI/NCI (upgradable)
- GCMS-QP2010 SE (Standard EI)
- Direct Injection (DI) (Optional)
- HS-20 Series (Headspace sampler)
- TD-30 (Thermal desorption system)
- AOC-6000 (Robotic tool changer, liquid, headspace, SPME, ITEX)
- OPTIC-4 (PTV)
- GCxGC and MDGC configurations
- PY-3030D (Pyrolysis) Columns
- SH-Columns for GC-MS

GCMS-QP2020 NX

Applications
Environmental
Flavor & Fragrance
Petroleum Industry
Forensics
RoHS/WEEE/ELV

LC-GC-GC-MS online System

The analysis of MOSH/MOAH is performed using an online LC-GC-FID system configuration, based on the European Norm EN 16995:2017. In this setup, the LC-40 is connected to a GC-2030 via a special interface, which consists of the CHRONECT® control unit and a heated valve unit. The GC uses two FID detectors, because they show a uniform response in hydrocarbon analysis. This is the only way to perform a quantitative determination of all individual components in a sum parameter.

In case of suspected interferences the mass spectrometer GCMS QP2020 NX can also be used for detection and verification of the data. This workstation is a fully automatic solution for the determination of mineral oil contaminants in food, feed, cosmetics, and packaging material.

Products

- LC-40
- GC-2030
- GCMS QP2020 NX

LC-GC-FID

Applications
Food & Beverage
Environmental
Chemicals

Chromatography Consumables – Best for Your System

Shimadzu, one of the world leaders in analytical instrumentation, has expanded its product portfolio of accessories and consumables by introducing a series of high-quality GC and HPLC columns. In this way, Shimadzu provides a single-sourced all-round solution consisting of instrument, columns, accessories and application support. Customers benefit from a seamless quality supply chain and instrument performance: The chromatography consumables have been adjusted and optimized for the leading-edge product range of analytical instrumentation systems – because valuable equipment matters.

Products

- Select from our new range of highly efficient core-shell based Shim-pack Velox columns, the standard series of Shim-pack G* providing superior inertness and excellent durability – or Shim-pack Scepter's excellent stability and performance of a hybrid-silica.
- The wide range of high quality GC capillary columns offers more than 40 different types of stationary phases in various dimensions. Standard polarities like 1, 5, WAX or 624 as well as columns for specific applications like PAH, blood alcohol or pesticide analysis always give a suitable choice for your applications.
- Many consumables such as syringes, liners, vials & caps for your LC and GC analysis

Shim-pack LC and SH-GC Columns

Based on Shimadzu's 60 years of experience in chromatography, the company's consumables solutions provide the perfect match of state-of-the-art columns and high-end instruments leading to customers' peace of mind.

REFERENCE STANDARDS – ALSACHIM

Alsachim is one of the world leaders in the synthesis of stable labeled (^{13}C, ^{2}H, ^{15}N) internal standards, stable labeled building blocks, APIs (Active Pharmaceutical Ingredient) and metabolites used in Bioanalysis studies. Alsachim has also deployed a qNMR (400 MHz) analytical method to certify the purity of Alsachim products.

Isotopically Labeled Compounds

Alsachim offers custom synthesis of stable isotopically labeled molecules including:

- Pharmaceutical Intermediates
- Isotopically-labelled reference standards
- Metabolites
- Peptides
- Biologically active molecules
- Controlled drug standards (DEA)
- NMR reference standards

All our products are delivered with a comprehensive analytical data package, including full spectroscopic analysis and experimental documentation. A Certificate of Analysis specifying chemical as well as chemical purity by ^{1}H NMR, ^{13}C NMR (400 MHz), HPLC purity, Isotopic mass purity, storage conditions, retest analysis, accompanies each compound.

Stable labeled isotopes

Applications
Pharmaceutical
- Clinical chemistry
- Therapeutic drug monitoring

Environment
Food & Beverage
Forensic & Toxicology
Doping

Ready-to-use 1 mg pack size!

We guarantee our compounds with a high isotopic purity.

DOSIMMUNE™ FOR IMMUNO-SUPPRESSANTS IN WHOLE BLOOD

DOSIMMUNE™ is a reagent kit to quantify immunosuppressant drugs (Cyclosporin A, Everolimus, Sirolimus, Tacrolimus) in whole blood using LC-MS/MS. This diagnostic kit, CE marked, is ready-to-use with all the components and accessories required to monitor immunosuppressants in patient whole blood sample. DOSIMMUNE™ is a customized solution based on the number of analysis that you perform.

DOSIMMUNE™ a turnkey solution

To ensure a repeatability and time saving, Alsachim propose a turnkey reagent kit with:

- 3 Sets composed by: calibrator Set (with 6 levels and blank), Internal Standard Set and Control Set (with 4 levels)
- ready-to-use consumables: Mobile Phase A, Mobile Phase B, System Cleaning Phase, extraction and re-constitution buffer, analytical & trap columns, LC vials, microtubes

- analytical method to allow the drugs quantification

DOSIMMUNE™ is supported by the manufacturer, and delivered with a consistent QC material.

Therapeutic drug monitoring

Accurate monitoring of immunosuppressant drugs is necessary for two reasons:

- to reduce transplant rejection or side-effects for patients
- their narrow therapeutic index.

Due to its specificity and sensitivity, mass spectrometry is the method of choice for the quantification of these molecules in such complex matrices. Consequently, and based on its stable labeled (^{13}C, ^{2}H, ^{15}N) internal standards expertise, Alsachim develops a Therapeutic Drug Monitoring kit with LC-MS/MS method for the quantification of immunosuppressant drugs in whole blood.

Data Management & Software

LabSolutions features an innovative operating environment and provides complete data management to ensure secure information in all kind of laboratories. A distinction is drawn between LabSolutions (file-based version), LabSolutions DB (data base) and LabSolutions CS (client-server) systems. LabSolutions enables simultaneous control and analysis of all kind of Shimadzu chromatography and spectroscopy systems. Also, different types of other vendor devices are controllable.

LabSolutions DB/CS integrates a data management function that is compliant with ER/ES regulations (electronic records/electronic signatures). While the software LabSolutions DB can handle up to 4 devices, the client-server system LabSolutions CS reads data from any personal computer on a network. In addition, analysis directions and instrument monitoring and control can be performed from a personal computer (client PC) not connected to the instruments. Beside the operation of the client-server software in a regulated environment like the pharmaceutical industry, it's often used where a large amount of data has to be collected (e.g. petrochemical industry).

Products

- LabSolutions
  - for Chromatography
  - for Spectroscopy
  - for TOC Analysis
  - for Testing Systems
- Client-Server Software
- Remote Support
- FDA 21 CFR Part 11, DIN EN ISO/IEC 17025:2017 compliant

LabSolutions

Applications
Pharmaceuticals
Food & Beverage
Environmental
Chemicals

LabSolutions – Data Integrity

Data Integrity is defined as the extent to which all data is complete, consistent and accurate throughout the "data lifecycle." This encompasses all phases in the life of the data from initial generation and recording through processing (including transformation or migration), use, data retention, archive, retrieval and destruction. Data must be unequivocally attributable to the operator.

All data needs to be protected and managed, and not tampered with throughout the data lifecycle.

To ensure reliability of acquired data, operating procedures have to be followed and computerized systems need to protect data integrity. With the LabSolutions "Report Set" function, the system searches automatically for all information relating to a batch or data file and registers a PDF report in the database. Information compiled can easily be found since method files and audit trail logs relating to batch and data files from login to logout of users are reported as well as instrument parameters and analytical results of each analysis.

Data files included in a "Report Set" are locked when created. An electronic signature records the data handler to ensure accuracy and reliability of the entire workflow.

LabSolutions "Report Set" offers:

- More reliability and accuracy of reports related to batch analysis
  - Automated collection of information preventing reports from being selected by intention or failing to be created due to an operational mistake
- Shorter time to create a detailed report
  - Just one click creates a "Report Set" from a selected batch file
- Better protection of report files
  - PDF report files are managed securely in the system
  - A "Report Set" can be recreated and operation logs are recorded
- Data integrity is ensured
  - A "Report Set" always includes integral data files, as original data files are locked when creating a report set
  - The data set is signed by the operator in charge

OpenSolution Software

The OpenSolution open access software platform provides a simple operational workflow for analytical, as well as preparative LC-MS operation, including method scale-up. Developed on a web interface, it is an ideal tool for LC/MS analysts performing molecular weight evaluation or purity confirmation tests of synthesized compounds.

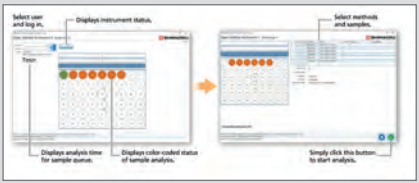
This intuitive software maximizes the use of network capabilities while enabling a set-up of a robust system for multiple users sharing one instrument, as common practice in Medicinal Chemistry departments in Pharma or CMC organizations, as well as organic synthesis groups in Academia.

Products

- Nexera UHPLC
- Nexera Prep
- LCMS-2020
- LCMS-2050

OpenSolution

Applications
Pharmaceutical
Chemical
Academia
Biotechnology



Delivering New Technology for Life Science

Shimadzu is focused on developing new tools by integrating novel chemistry with innovative technology to help accelerate life science research.

Whether an experiment for protein expression, characterizing differences in metabolism studies or tissue imaging with mass spectrometry, Shimadzu can help you discover more about your biological samples.

MALDI-MS | Matrix preparation | DNA/RNA Analysis | Brain Imaging

Imaging Mass Microscope | Edman Sequencing

MALDI-TOF Mass Spectrometry

The AXIMA series of MALDI mass spectrometers is controlled by the LaunchPad suite of software, permitting manual or fully automated operation. Various specifically designed software modules enable the AXIMA suite of Mass Spectrometers to analyze a wide variety of sample types.

The AXIMA Assurance™, a simple yet highly effective linear MALDI TOF MS, is ideally suited for high-throughput QA/QC environments and basic mass measurements. The patented curved field reflectron (CFR) of the AXIMA Confidence™ allows accurate peptide mass fingerprinting and protein MS/MS-based confirmation using PSD.

The AXIMA Performance™ incorporates high-energy CID (TOF/TOF), enabling protein identification in complex samples and MS/MS analysis of a wide range of substrates.

Products

- AXIMA Assurance™ (Linear MALDI MS)
- AXIMA Confidence™ (High-performance linear/reflectron MALDI MS)
- AXIMA Performance™ (Versatile and powerful TOF-TOF system)

AXIMA Series

Applications
Proteome Analysis
Polymer Analysis
Structural Analysis
Identification of Microorganisms
QA/QC Analysis
Biomarker Discovery
Structural Analysis of Glycans

High throughput MALDI-TOF

Offering unparalleled MS/MS resolution and excellent mass accuracy, Shimadzu's highthroughput, high-energy, high-resolution MALDI-7090™ tandem mass spectrometer achieves a new level of MALDI-TOF MS performance. It combines Shimadzu's extensive MALDI TOF-TOF mass spectrometry expertise with novel patented technology to provide ultimate performance in identification and structural characterization of biomolecules. It features 2 kHz acquisitions in all modes, a high-resolution ion gate, low and high energy fragmentation, a 10 plate sample loader and a multi-user software environment.

Benchtop linear MALDI-TOF
MALDI-8020: The MALDI-8020 is a benchtop, linear MALDI-TOF mass spectrometer designed to meet the needs of laboratories requiring a cost-effective MALDI-TOF platform. Its features include a 200 Hz solid-state laser (355 nm), a fast sample introduction via a load-lock chamber with an integrated barcode reader and an UV laser-based source cleaning (TrueClean™), all with a small footprint/Benchtop design. It is particularly suited to microbiology, MW confirmation, QA/QC of peptides and forensic applications.

Products

- MALDI-7090™ (TOF-TOF)
- MALDI-8030 (linear TOF +/-)
- MALDImini-1 (Digital IT)
- MALDI-8020 (Linear TOF +)

MALDI-7090™

Applications
MS Tissue Imaging
High-Throughput LC-MALDI Analysis

MALDI-8020

Applications
MW Confirmation
QA/QC of Peptides

UV-VIS Spectrophotometer

A spectrophotometer dedicated to carrying out concentration checks for DNA and RNA nucleic acid samples, the BioSpec-nano enables life science researchers to conserve precious samples and to obtain accurate and reproducible results easily.

An automatic Mounting/Wiping Function makes it possible. The upper window moves automatically, and a droplet having the specified path length is formed. After measurement, liquid-contact parts (upper window and target) are wiped automatically by the specialized wiper. Quantitation of DNA and RNA can be carried out with very small samples around 1 µL. The software is designed for simple operation. All basic operations such as measurement, changing the wiper, switching data display, report output (in PDF file) and data export (in CSV format) can be carried out by clicking buttons on the tool bar.

The BioSpec-nano now offers photometric and protein analysis capabilities.

Products

- BioSpec-nano (UV-VIS spectrophotometer for life science research & development)

BioSpec-nano

Applications
Quantitation Analysis for
DNA and RNA Nucleic Acid
Photometric Measurement
Protein Analysis

Automated Protein and Peptide Sequencer

PPSQ-51A/53A systems use Edman degradation to cleave amino acids, one at a time, from the N-terminals of proteins or peptides, and then derivatize them to PTH amino acids to identify them according to their retention time by using HPLC. The N-terminal sequence of proteins and peptides can be determined. PPSQ-51A/53A systems are useful for sequencing proteins and peptides of organisms with no existing database (de novo sequencing), sequencing of proteins actually functioning within a biological organism, or confirming the sequence of amino acids from N-terminals of artificially synthesized proteins or peptides.

PPSQ and HPLC systems operate using a single software program, enabling easier sequence analysis of proteins and peptides and making it extremely easy to specify analytical conditions or view results.

Products

Protein Sequencing
- PPSQ-51A/53A isocratic
- PPSQ-51A/53A gradient

PPSQ-51A/53A

Applications
Protein Sequencing via Automated Edman Degradation Chemistry

Imaging Mass Spectrometry

The iMScopeQT combines an optical microscope for observation of high-resolution morphological images with a mass spectrometer for identification and visualization of the distribution of specific molecules. Superimposing the two images obtained by these very different principles has created a significant new research tool, the imaging mass microscope.

The iMLayer boosts spatial resolution for mass spectrometry experiments by enabling reproducible matrix coating with small crystals. Delocalization effects are minimized using a matrix vapor deposition by sublimation, which allows full use of laser focusing from the MALDI technology.

Products

- iMScopeQT
- iMLayer
- iMLayer AERO

iMScopeQT

Applications
MS Imaging

iMLayer

Applications
Matrix deposition

functional Near-Infrared Spectroscopy (fNIRS)

Just how the human brain functions remains one of the greatest unsolved puzzles. To solve this mystery, brain-function imaging for visualization of brain functions has developed rapidly in recent years. In particular, in vivo optical imaging by functional near-infrared spectroscopy (fNIRS) has attracted attention. By measuring the oxygen state of the cerebral coretex, the active regions of high-order brain function can be observed in real time.

LABNIRS provides next-generation optical brain-function measurements with multichannel (up to 142 channels) and high density. Reliability of 3 wavelength and photomultiplier tube achieve superb sensitivity. LIGHTNIRS, the portable fNIRS system, and its two types of whole-head holder enable measurement in a natural, unrestricted environment with up to 22 channels. Consequently, LABNIRS and LIGHTNIRS can be used in a wide range of applications, including healthcare, psychology, education, cognitive science, and engineering.

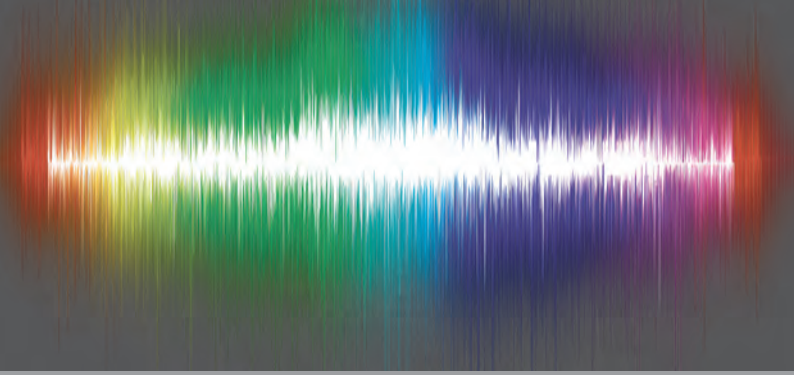
Products

- LABNIRS
- LIGHTNIRS

LABNIRS

Applications
Rehabilitation Research
Drug Development and Medical Research
Basic Research
Brain Machine Interface (BMI)
Education and Psychology Research
Neuromarketing Research

LIGHTNIRS



Spectroscopy Products

Spectroscopy is a general term for analytical methods utilizing ultraviolet (UV), visible (Vis), infrared (IR) or near infrared (NIR) light to analyze substances.

Major types include absorption spectroscopy, where the absorption of specific wavelengths resulting from different molecular structures is measured, atomic absorption spectroscopy, where substances are first atomized and the absorption of the atomic vapor is then measured, fluorescence spectroscopy where a specific wavelength is absorbed and the emission of a different wavelength is then measured, and inductively coupled plasma optical emission or mass spectroscopy (ICP-OES or ICP-MS), where substances are subjected to high-temperature excitation and characteristic light emissions from elements or the ion masses are measured respectively.

Instruments measuring absorption, atomic absorption or fluorescence are comprised primarily of light sources, monochromators and detectors. In emission spectrometers, the sample is introduced into the light source. Shimadzu's product line includes UV-VIS-NIR spectrophotometers, Fourier transform infrared spectrophotometers, atomic absorption spectrophotometers and ICP-OES and ICP-MS spectrometers.

UV	**FTIR**	**AA**
Spectrofluorophotometer	**ICP-MS**	**ICP-OES**

UV-Vis Spectrophotometer

In the past, spectrophotometers were developed primarily to measure the absorption of liquid samples. Recently, however, there has been a significant increase in applications measuring the reflectance or absorption of solid samples, such as semiconductors, thin films, glass or absorbents. In the life sciences, there is a need for highthroughput systems that can rapidly analyze ultra-trace samples with high sensitivity. In the pharmaceuticals industry, instruments must have security and audit-trail features to help with GxP/Part 11 compliance.

The UV-2600i is a single monochromator type that provides high cost efficiency, while the UV-2700i is a double monochromator type. These compact UV-Vis spectrophotometers feature miniaturized optical systems, a width of only 450 mm, and the smallest installation space requirements in their class. Low stray light has been achieved by adopting a Lo-Ray-Ligh grade diffraction grating, enabling high-level absorbance measurements up to 8-Abs with the UV-2700i.

Products

- UV-3700i (UV-Vis-NIR spectrophotometer)
- UV-3600i Plus (UV-Vis-NIR spectrophotometer)
- UV-2600i/2700i (UV-Vis spectrophotometer with variable bandwidth)
- UV-1900i (Routine spectrophotometer)
- UV-1280 (Compact spectrophotometer)

UV-1900i

Applications
Biotechnology
Pharmaceuticals
Petroleum-based Chemicals
Biofuels
Water Quality
Nanotechnology
Solar Cells

reddot award 2019
winner

FTIR Spectrophotometer

Fourier transform infrared (FTIR) spectrophotometers are used to identify substances. When molecules are irradiated with infrared light, the infrared wavelengths corresponding to the vibrational energy between the constituent atoms are absorbed. This absorption is used to identify and quantify the molecular structures. Shimadzu's IRTracer-100 offers best-in-class 60,000:1 S/N ratio, which allows researchers to obtain high-quality data quickly and easily. Resolution of 0.25 cm^{-1} provides for highly accurate quantitation and identification. In addition, a rapid scan function allows rapid sample acquisition of 20 spectra per second. This enables analysis of reaction and kinetic studies.

LabSolutions IR Series software offers intuitive operation, high-level administrative functions, secure data management and a variety of data processing functions.

Products

- IRTracer-100 (FTIR Spectrophotometer with rapid scan functionality)
- IRAffinity-1S (FTIR spectrophotometer)
- IRSpirit (Compact FTIR spectrophotometer)
- Optional accessories for solids/liquids/gases/microsamples

IRSpirit

Applications
Pharmaceuticals
Organic Chemistry
Polymers
Environmental
RoHS/WEEE/ELV
Containment Analysis
Solar Cells

Infrared Microscopy

Infrared Microscopy is used primarily for the study of micro samples as well as for measurements in failure analysis. In polymer samples and food samples, in raw materials, intermediates and end products, in factories as well as on crime scenes, micro samples like contaminations can be present. It is important to know what they are and where they come from in order to claim to the supplier, adjust the manufacturing process or find a party guilty.

The AIM-9000 is more than just an infrared microscope; it is an Automatic Failure Analysis System with a unique concept allowing complete automation of all necessary steps involved in Failure Analysis and micro sample evaluation; observation, definition of measurement spots, measurement and identification.

The AIM-9000 is compatible with both Shimadzu's IRAffinity-1S and IRTracer-100 FTIR Spectrophotometers. In combination with the IRTracer-100, the AIM-9000 is an extremely powerful platform offering the highest specifications in the market. Shimadzu aims to provide an analysis system for all users so that micro analysis can be performed quickly and easily. All our accumulated know-how in micro analysis is concentrated in the AIM-9000 to strongly support analysts.

Products

- AIM-9000 (Automatic Failure Analysis System)

AIM-9000

Applications
Polymers
Food
Forensics
Failure Analysis
Contaminant Analysis

Spectrofluorophotometer

By combining new technologies with those cultivated over Shimadzu's long history, the Shimadzu spectrofluorophotometer has been reborn as the RF-6000. Combined with new LabSolutions RF software and designed for unrivaled measurement accuracy and easy operation, the RF-6000 offers the ultimate performance for a diverse range of customers' measurement needs.

Compared to absorption methods, fluorescence spectroscopy is ten to several thousand times more sensitive. This allows analysis of picogram to nanogram-sized samples with excellent results. Fluorescence can also be used to identify specific molecules in a complex spectral background. This technique is widely used in pharmaceuticals and pharmacology, biochemistry, food science, environmental monitoring and chemical analyses.

Fluorescence is also used for new material applications such as research of Organic EL device, Organic solar cell and artificial photosynthesis. In these applications, not only high sensitivity but also automatic spectrum correction function and fluorescence quantum yield/efficiency measurement functions are very useful.

Products

- RF-6000 (Spectrofluorophotometer)

RF-6000

Applications
Biotechnology
Pharmaceuticals
Paints/Dyes/Pigments/Inks/Solvents
Water Treatment
Food Safety & Science
Semiconductors
Solar Cells
Metals/Ceramics

Atomic Absorption Spectrophotometer

Since introducing its first atomic absorption spectrophotometer in 1968, Shimadzu has continued to lead the field of inorganic compound analysis. Shimadzu now offers the AA-7000. This flexible system provides users with best-in-class sensitivity and can be customized into a low-cost single-purpose model and a fully automatic generalpurpose system.

The AA-7000 employs many safety features and it is the world's first AA spectrophotometer with an automatic quench function which works in case of detection of an earthquake. The WizAArd workstation software is also improved and can be linked to CLASS-Public Agent software to provide compliance with FDA 21 CFR Part 11.

Products

- AA-7000F (Flame type)
- AA-7000G (Furnace type)
- AA-7000F/AAC + GFA-7000A (Optional / Flame and furnace type)
- HC-Lamps for single and multi-elements measurement
- High quality and long-life graphite tubes

AA-7000F/AAC Dual Atomizer System

Applications
Environmental
Agriculture & Food
Water Quality
RoHS/WEEE/ELV

Inductively Coupled Plasma Mass Spectrometer (ICP-MS)

The ICPMS-2030 Inductively Coupled Plasma Mass Spectrometer is Shimadzu's first global ICP-MS platform and is designed with focus on high stability, excellent sensitivity and low interference. The ICPMS-2030 is one of the smallest ICPMS platforms available today. Many features bring peace of mind to both users of the system and to laboratory managers with a strict budget to manage. The LabSolutions ICPMS software is user friendly, offers assistant functions to those with less experience and is backed by a central software platform for compliancy. The running costs set a new benchmark with low argon consumption & quality demand and easy to maintain hardware. The new ICPMS-2030 is designed primarily to respond to ICH-Q3D guidelines for elemental impurities in pharmaceutical products. The guideline specifies allowable limits of daily intake of 24 elements of toxicological concern, and requires highly sensitive and highly precise measurement of such elements. Shimadzu's ICPMS-2030 satisfies these requirements with ppt level sensitivity and FDA 21 CFR Part 11 compliance. Many applications also exist for the ICPMS-2030 in the food safety and environmental segments. In food safety the focal point will certainly be simultaneous evaluation of nutritional elements present in high concentrations, in combination with the evaluation of trace elements and toxic elements in very low concentrations. In the environmental segment there is also a considerable need for elemental analysis with ever increasing legislations in drinking water & waste water and the growing need for recycling.

Products

- ICPMS-2030 Series (Inductively Coupled Plasma Mass Spectrometer)

ICPMS-2030 Series

Applications
Pharmaceutical
Environmental
Agriculture & Food Safety
Clinical

Inductively Coupled Plasma Atomic Emission Spectrometer (ICP-OES)

ICP-OES introduces sample solution by spraying into a plasma generated by an induction coil supplied with a high-frequency current. The resulting thermal energy excites the sample elements and produces light. The spectrometer separates this light into characteristic spectra of the constituent elements, and based on the intensity of spectra determines the type of elements (qualitation) and their concentration (quantitation) in the sample. The ICPE-9800 series consists of high-speed simultaneous systems featuring a large one-inch CCD for low noise and fully featured ICPEsolution software.

The new ICPE-9800 Series consists of the ICPE-9810 providing axial view plasma observation, and the ICPE-9820 which in addition to axial view provides radial view plasma observation in the vertical direction. This dual view capability allows measurements to switch automatically between high- sensitivity using axial view and high-concentration using radial view, enabling analysis of elements across a wide concentration range with a single method.

Products

- ICPE-9810 (Simultaneous, Axial view)
- ICPE-9820 (Simultaneous, Axial view and Radial view)

ICPE-9800 Series

Applications
Environmental
Petrochemical Industry
Food Safety
Metals
Semiconductors
RoHS/WEEE/ELV
Solar Cells
Pharmaceuticals

X-Ray Fluorescense Spectrometer

X-ray spectroscopic analysis apparatus utilizes X-rays to measure and analyze elemental compositions. Energy Dispersive X-ray fluorescence spectrometers (EDX) detect X-ray fluorescence to identify the type of elements contained in samples (qualitative analysis) and measure the concentration of each (quantitative analysis).

Shimadzu's EDX systems provide an easy way to measure almost all elements in the periodic table of elements. Shimadzu has extensive experience in providing EDX systems to customers for screening of electrical/electronic parts or automotive parts (like RoHS or ELV directive) to determine to what degree they contain these regulated substances.

EDX

Energy Dispersive X-Ray Fluorescence Spectrometer

X-ray fluorescence spectrometers irradiate samples with X-rays and measure the characteristic wavelengths/energy (X-ray fluorescence) generated by the sample. They are able to identify the type of constituent elements in samples and measure the concentration of each. Since samples can be analyzed non-destructively and without contacting the sample, X-ray fluorescence spectrometers can be used for a wide range of applications, regardless of whether the sample is a solid, liquid, powder or other form.

The EDX-Series allows liquid nitrogen free analysis through use of high performance SDD detectors. An energy resolution of better than 140 eV reduces significantly the impact of coexisting elements and the same quality of results in 1/10 of the measurement time compared to previous models can be expected. In addition, the time-reduction function and switching calibration-curve function make this model easy to use and a more efficient tool for screening assessment.

Products

- EDX-Series

EDX-Series

Applications
RoHS/ELV Analysis
Ferrous & Non-Ferrous Metals
Petrochemical Industry
Agriculture & Food
Semiconductors

Total Organic Carbon Analyzers

Environmental analysis involves analyzing the natural environment, such as the atmosphere, water and soil, as well as analyzing of industrial gas emissions and effluent water. In keeping with the management principle, "Realizing our Wishes for the Well-being of Mankind and the Earth", Shimadzu is developing a variety of instruments for environmental analysis.

Shimadzu is committed to the protection of the global environment by supplying total organic carbon (TOC) analyzers for water monitoring.

TOC (Total Organic Carbon Analyzer)

Online TOC Analyzer

Laboratory TOC Analysis

Total organic carbon (TOC) analyzers measure the total amount of organic matter contained in water. They are used for a wide range of applications, from environmental analysis, water treatment management and various process control applications, to cleaning validation in the production of food and medication.

TOC analyzers are available either as laboratory models or as online analysis models. Laboratory TOC analyzers offer a wide assortment of options for analyzing everything from ultra-pure water to contaminated water and solid to gaseous.

Shimadzu offers a total of seven models, based either on the 680 °C combustion catalytic oxidation method developed by Shimadzu and subsequently spread throughout the world, the wet chemical oxidation method, or the UV-conductometric method. With an ultra-wide measurement range (4 µ/L to 30,000 mg/L), patented 680 °C Combustion Catalytic Oxidation/NDIR detection method and powerful options/accessories, the TOC-L Series meets TOC testing requirements in a wide range of applications.

Products

- Catalytic combustion oxidation TOC analyzer
- Wet chemical oxidation TOC analyzer
- Total nitrogen unit for TOC
- Solid sample combustion unit for TOC
- Certified and un-certified vials for TOC analysis
- Online TOC analyzers

TOC-L Series

Applications
Environmental Monitoring
Process Analysis
Ultra-Pure Water
Cleaning Validation
Pharmaceutical Water Management

Online TOC/TN-Analyzer

Online TOC analyzers are used for a wide variety of applications, from managing raw water for wastewater treatment or discharge of effluent water after treatment, to monitoring organic impurities in public water supplies, cooling water, condensate water or rinse water.

The 4200 Series Shimadzu Online Water Quality Analyzers with their proven combustion technology lead the way in online water quality analysis technology. The TOC-4200 features the proven, industry-standard 680 °C Combustion Catalytic Oxidation Method and a number of cost-reducing features to support sensitive, efficient TOC analyses. Features include multi-functional sample injector, high-salt sample combustion tube kit and an on-board air purifier.

Products

- TOC-4200 (Online TOC Analyzer)
- Total nitrogen unit to measure TOC & TN simultaneously

TOC-4200

Applications
Management of Influent and Effluent Water
Monitoring of Boiler and Condensate Water
Management of Various Plant Waters
Water Quality Monitoring for Regulatory Reporting

Online TOC-Analyzer for pure water

The new TOC-1000e is the first analyzer in the eTOC series of UV-conductometric online TOC analyzers for ultra-pure applications. This covers manufacturing, including pharmaceuticals, semiconductors, food & beverages, chemistry and precision equipment.

The eTOC series' main focus is miniaturization, support for regulatory compliance, ease of use and a typical maintenance cycle of 1 year, making it ideal for fields requiring high-purity water.

The TOC-1000e provides high sensitivity for both TOC and conductivity analysis. The novel fluid system "active path" minimizes sample residue and maximizes UV irradiation, ensuring high sensitivity is maintained. Inbuilt security functions support compliance with regulations such as FDA 21 CFR Part 11.

Products

- TOC-1000e (Online TOC analyzer for pure water)
- Data handling using LabSolutions S/W platform incl. ER/ES functionality
- Batch vial sampler for on-site calibration and validation

TOC-1000e

Applications
Ultra-pure water
Pharmaceutical water management
Semiconductors
Precision Manufacturing

Materials Testing & Inspection

Shimadzu began production of its first material testing machine in 1917 and has continued since then to provide testing machines that are vital to product development. Instruments include our Autograph high-precision universal testing machines, Servopulser fatigue testing machines, hardness testers and particle size analyzers. These products have undergone many improvements and are now widely accepted as being equipped with superior technology. Testing machines have existed since the onset of manufacturing to assure the quality of production metrics.

Our efforts to satisfy the rigorous demands of customers over the past 100 years have earned us the reputation of being the world's top manufacturer of testing machines. Shimadzu remains committed to challenging ourselves to innovate and develop new evaluation technologies to satisfy increasing demands for safety and reliability.

Universal Tester | **Fatigue and Endurance Testing System**

Hardness Tester | **Particle Size Analyzer** | **High Speed Video Camera**

Universal Tester

Tests to evaluate the strength of objects are conducted across a wide range of scales from fine particles and surface-mounted components in the nano-range to large steel and concrete specimens. Forces applied cover a wide range from 2 mN to 2000 kN (or more).

Various types of strength tests are conducted, including tensile, compression, bending, crack, peeling, creep and stress relaxation testing. The Shimadzu Universal Tester lineup is a powerful range of tools for every field of application to meet all customer requirements.

Products

- UH-X/FX Series (Hydraulic universal tester)
- AGX-V (High-End universal tester)
- AGS-X/HC Series (Standard universal tester)
- EZTest Series (Tabletop-type precision tester)

Autograph AGX-V

Applications
Steel & Metals
Automobile
Plastics & Rubber
Tapes & Films
Composites/CFRP
Aerospace
Railroad Testing Systems

Fatigue and Endurance Testing System

The evaluation of strength, which relates to safety and durability, will affect the product's life. It has become increasingly important in areas such as product development, quality control and failure analysis. The Servopulser Series of high performance and high accuracy fatigue testing machines can accommodate this diverse range of requirements. The comprehensive lineup allows configuration of the optimal system for each user requirement. The EMT Series Servopulser fatigue testing machine operates exclusively with electric power. With closed loop (servo) control, it allows stable loading over a wide range of test forces and displacements (strain) for dynamic or static testing. With the USF-2000A ultrasonic fatigue testing system in standard- or mean stress configuration, fatigue tests in the Very-High-Cycle-Fatigue (VHCF) range can be performed time- and cost-efficiently. At a frequency of 20 kHz, the system provides data about the fatigue behaviour and the fatigue strength for 10^7 cycles in about 10 minutes and for 10^{10} cycles within 6 days.

Products

- EMT Series (Electro Magnetic fatigue fatigue testing system)
- MMT Series (Electromagnetic micro fatigue testing system)
- USF-2000A (Ultrasonic fatigue testing system)
- EHF Series (Hydraulic servopulser dynamic systems)

Ultrasonic Fatigue Testing System

Applications
Automotive
Aerospace
Railway
Additive Manufacturing
New materials development

Hardness Tester and Surface Evaluation Tester

The micro hardness tester is indispensable in metallographic research, product quality control and the research and development of new materials. For this type of work, it is important to be able to measure the hardness of small parts and metallic structures used in precision equipment, processed surface layers, metal plating layers etc.

This type of measurement must be performed on a limited small area with minimal damage to the area being measured, and must yield extremely reliable results.

Products

- HMV Series (Micro hardness tester)
- DUH Series (Dynamic ultra micro hardness tester)
- MCT Series (Micro compression tester)

DUH-211/DUH-211S

Applications
Steel & Metals
Heat Treatment
Ceramics
Electrical & Electronics
Nanotechnology
Solar Cells

Powder & Particle Size Analyzer

Laser diffraction particle size analyzers measure particle size distributions. Particle size determines behavior and characteristics of a sample. In additive manufacturing, both size and homogeneity of the metal powder influence stability of the final product. In the case of foods, particle size and distribution can be a major factor in determining "smoothness to the teeth" and "texture." Too large pigments can block printer nozzles. In pharmaceuticals, particle size can influence drug effectiveness or cause side effects.

Products

- SALD-2300 (Laser Diffraction Particle Size Analyzer, 17 nm to 2,500 µm)
- SALD-7500nano (Laser Diffraction Particle Size Analyzer, 7 nm to 800 µm)

SALD-2300

Applications
Nanotechnology
Pharmaceuticals
Cosmetics
Food Products
Ceramics
Macromolecules
Catalysts
Electronic Materials
Soil and CivilEngineering Material

Aggregation Analysis System for Biopharmaceuticals

Shimadzu's new Aggregates Sizer Aggregation Analysis System allows quantitative evaluation of aggregates between 100 nm – 10 µm (sub visible range) in real time. Sub-visible particle aggregates (SVP's) in biopharmaceuticals are an unintended risk in the manufacturing process. These aggregates can induce allergic systemic reactions, such as anaphylaxis and other severe side effects if they make their way into the final product. Based on the laser diffraction method, the Aggregates Sizer is able to identify particle sizes in the range of 7 nm to 800 µm.

A sample volume of 0.4 mL is needed to measure concentration of these aggregates in µ/mL. The Aggregates Sizer can execute ongoing measurements in intervals as short as one second, allowing users to evaluate rates of change at intermediate stages during the manufacturing process. In addition, a batch cell (5 mL sample capacity) enables observation of aggregation processes by mechanical stimulation. This helps to prevent the formation of aggregates during drug manufacturing and accelerates testing without the need for additional equipment.

Products

- Aggregates Sizer

Aggregates Sizer

Applications
Biopharmaceuticals

High-Speed Video Camera

Shimadzu's High-Speed Video Camera, the HyperVision HPV-X2, offers world-class ultra-high-speed video recording of up to ten million frames per second. Dedicated software allows recording to start immediately after performing a few simple settings. Recorded images can be saved in general image formats such as AVI or Tiff.

The HPV-X2 permits not previously possible recording of ultra-high-speed phenomena in a wide variety of fields requiring high-speed image capture, such as materials failure, fluid dynamics and combustion.

The HPV-X2 allows ultra-high-speed recordings of up to 10 million frames per second at a resolution of 400 x 250 px. The new model comes with increased light sensitivity (6 x) and advanced synchronization possibilities (real frame to frame synchronisation of multiple cameras).

Products

- HPV-X2 (10,000,000 fps high-speed video camera)

HyperVision HPV-X2

Applications
3D-DIC (by use of 2 x HPV-X2)
Fluid Dynamics
Electric Discharge
Material Research

UniBloc Family of Balances

AUW-D Series **Dual-range Semi-micro Balances**

AUW-D dual-range semi-micro balances are the first five-decimal balances with the advantages of UniBloc one-piece force cell technology.

AUW / AUX / AUY / ATX / ATY Series **Analytical Balances**

AUW/AUX/AUY models are the newest single-range analytical balances engineered with UniBloc technology. This provides especially fast response and superb stability.

UW / UX / TX / TXB Series **Top-Loading Balances**

The new line of Shimadzu top-loading balances are engineered with UniBloc, resulting in unrivaled response, stability and durability. Powerful features support any imaginable weighing application. The UW Series includes internal calibration and fully automatic calibration functions.

BW-K / BX-K Series **Precision Platform Balances**

Shimadzu's Precision Platform balances have been engineered with the innovative UniBloc mechanism since 1989. Powerful features support any imaginable weighing application. The BW-K Series includes internal calibration weight.

MOC63u / MOC-120H **Electronic Moisture Balances**

In many fields, a moisture analyzer is necessary for quality control requirements. With the MOC63u, accurate data is acquired easily by placing the material on the pan and shutting the cover. The MOC63u will then measure, and can be adapted to various materials.

Customizable Service Agreements

Preventative Maintenance (PM) performed by factory trained Shimadzu Field Service Engineers is key to reliable system operation.

Whether a highly regulated or non-regulated laboratory, our Service Administration staff are trained to schedule Planned Maintenance and Intervention visits at your convenience, meeting your specific demands.

Shimadzu offers a range of "best fit" Service Agreement options for individual requirements. Listed below are the benefits of each type, starting from cost effective "PM Standard" up to the "PM & extended Warranty" Service agreement to ensure stable costs during the contract period.

	Service Agreement Type					
	PM Standard	PM Premium	PM & Repair Standard	PM & Repair Basic	PM & Repair Plus	PM & Extended Warranty
Service performed by Shimadzu certified Engineers	✓	✓	✓	✓	✓	✓
Hardware phone support	✓	✓	✓	✓	✓	✓
Software phone support	✓	✓	✓	✓	✓	✓
PM labor & travel	✓	✓	✓	✓	✓	✓
PM parts		✓		✓ *		✓
Repair labor & travel			✓	✓	✓	✓
Standard repair parts					✓	✓
48 hrs Response Time			Option	Option	Option	Option
Operational Qualification	Option	Option	Option	Option	Option	Option
Turbo Pump coverage		Option			Option	✓

*Selected parts only
Note: Availability and name of each category depends on country.
For details, contact your local service representative.

Consumables Search by “Easy Parts Lookup”

With the new Easy Parts Lookup you can easily find the appropriate consumables for your Shimadzu instrument. These consumables are specified to guarantee the best fit for our instruments.

Just register for free on our website, start browsing and find the right accessories for your Shimadzu system. In addition to part numbers you will also find useful information such as:

- Compatibility data
- Material information
- Assembly diagrams
- Parts pictures
- Selection conditions

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