JASCO

Spectroscopy and Chromatography Technology

FT-IR
Raman
UV-Vis/NIR
Dissolution Testing
Circular Dichroism
Fluorescence
Polarimetry
X-LC
HPLC
SFC/SFE

Superior Performance
Superior Innovation
Superior Reliability

The JASCO range of Ana

In 1958, to meet the need for an Infrared Spectrophotometer at the Institute of Optics (now Tsukuba University), a group of researchers developed their own instrument. This was a great success with a highly reliable unit giving excellent optical performance. This led to other research groups requesting similar instruments for their laboratories and the founding of JASCO Corporation in 1958 to meet the growing demand for optical spectroscopy instrumentation. Today, JASCO manufactures a wide range of UV-Vis/NIR, FT-IR, Fluorescence, Raman and related spectroscopic instrumentation. JASCO is also the world leader in the field of Circular Dichroism Spectropolarimeters.

The experience gained by JASCO in both optical design and computer technology led to the production of spectrophotometric detectors for HPLC. The move into the HPLC market continued with the production of solvent delivery systems, gradient elution devices and a complete range of detectors. JASCO now has 30 years experience in the design and development of innovative chromatography instrumentation for a wide range of applications. The X-LC® (extreme pressure liquid chromatography) provides researchers with a powerful new tool to achieve efficiency and speed. For over 20 years, JASCO has also responded to the growing emphasis on reducing chemical waste by offering an alternative to traditional HPLC with a full line of "green" SFC/SFE products.

A worldwide network of JASCO companies supports the full range of analytical instrumentation in educational, industrial, quality control and research laboratories.

lytical Instrumentation

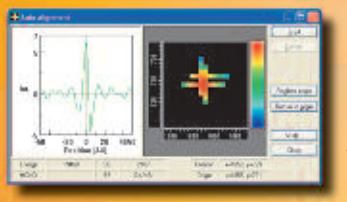
Spectra Manager™ Suite

A single platform software for all JASCO spectroscopy instruments

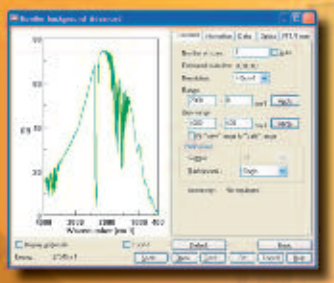
JASCO is the first manufacturer to develop a powerful, cross-platform Windows® software package for controlling a wide range of spectroscopic instrumentation. The Spectra Manager program is a comprehensive package for capturing and processing data, eliminating the need to learn multiple software packages and offering the user a time-saving benefit.

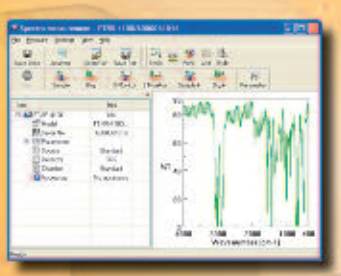
- *Spectrum measurement*
- *Spectral analysis*
- *Multiple instrument control*
- *Instrument validation*
- *Self diagnostic routines*
- *Publication-quality printouts*
- *Automated macros command option*
- *Quantitative analysis packages*

System Control & Data Acquisition



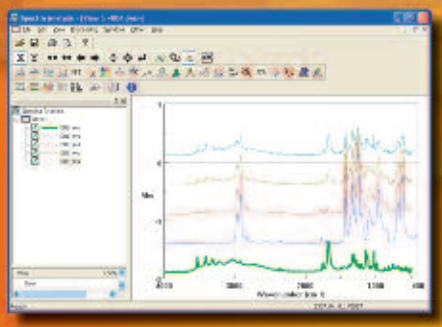
Drivers are available to control each JASCO spectroscopy instrument. Parameter dialogs allow easy editing of pre-saved parameter files.

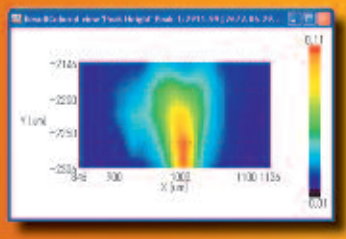


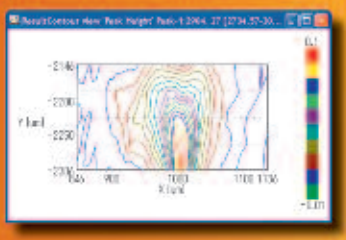


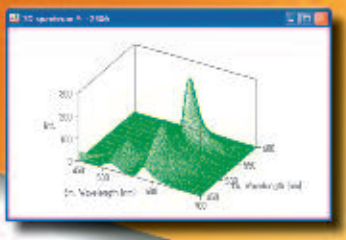
Flexible Display Features

User-friendly features include overlay printing in colors and patterns, autoscale mode, full control of style and font, customized tool bars, etc.



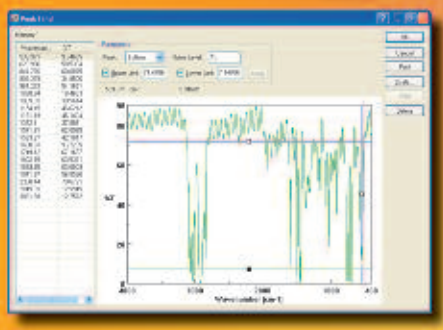






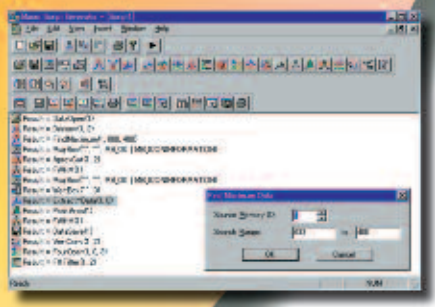
Data Processing & Spectral Analysis

Several types of measurement data files (UV/Vis/NIR, FTIR, Fluorescence, etc.) can be viewed in a single window, and processed using a full range of data manipulation functions. Features include arithmetic operations, derivatives, peak detection and processing, smoothing (several methods), baseline correction, etc.



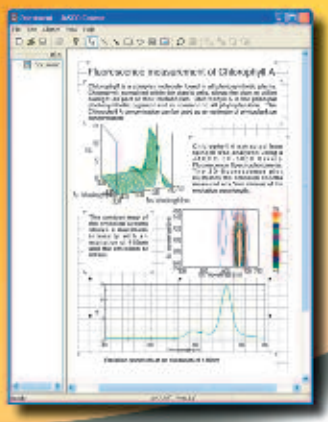
Macro Command Option

This software provides customized programs for a complete range of tasks including data acquisition, post-run data manipulation, report printing, etc.



Report Publishing

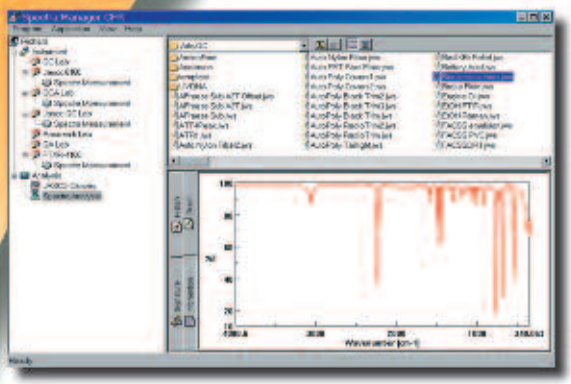
JASCO canvas allows the user to produce hard copy layouts of data to meet their own report requirements.



Spectra Manager™ CFR

Spectra Manager™ CFR provides features to support laboratories for compliance with 21 CFR Part 11. A choice of complete pull-down task menus, user-friendly icons, and easily accessible pop-up menus enables new users to manage security information, control user access, and record audit trails.

- ***Management of security information for systems, users, data and records***
- ***Access control for secure systems by user ID and password***
- ***Audit trail function with time-stamp for tracking records***
- ***Three levels of electronic signatures for record integrity***

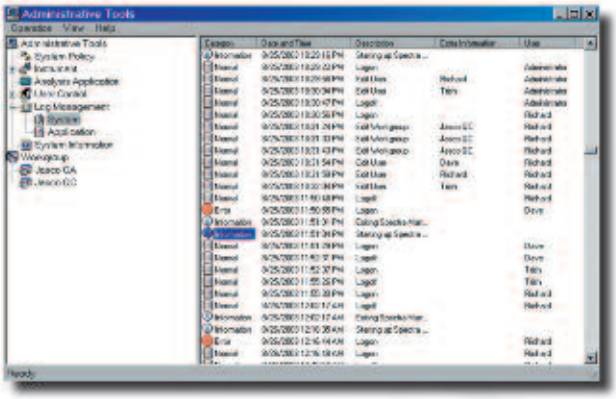


Easy-to-use

Startup window lists available resources, such as instruments, measurement and application programs. User access requires a Username and Password, assigned by the Workgroup Manager.

Audit Trail for System and Applications

The system and application history are automatically recorded.

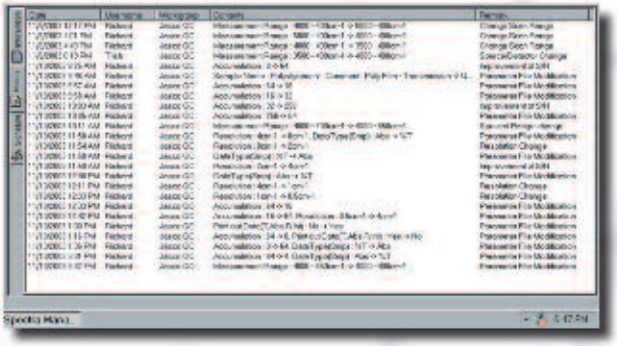


Access Rights Control

System access levels for Administrator, Power User, Limited User and User are defined.

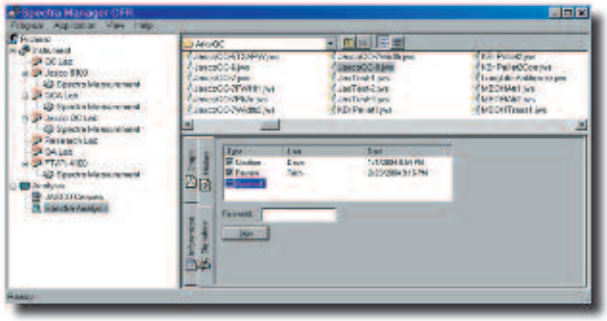
Audit Trail for Data Files and Parameters

Audit trails are assigned to every data file, recording data manipulations on the spectral data. Audit trails are also applied to instrument parameters, Canvas templates and Method files.



Electronic Signatures

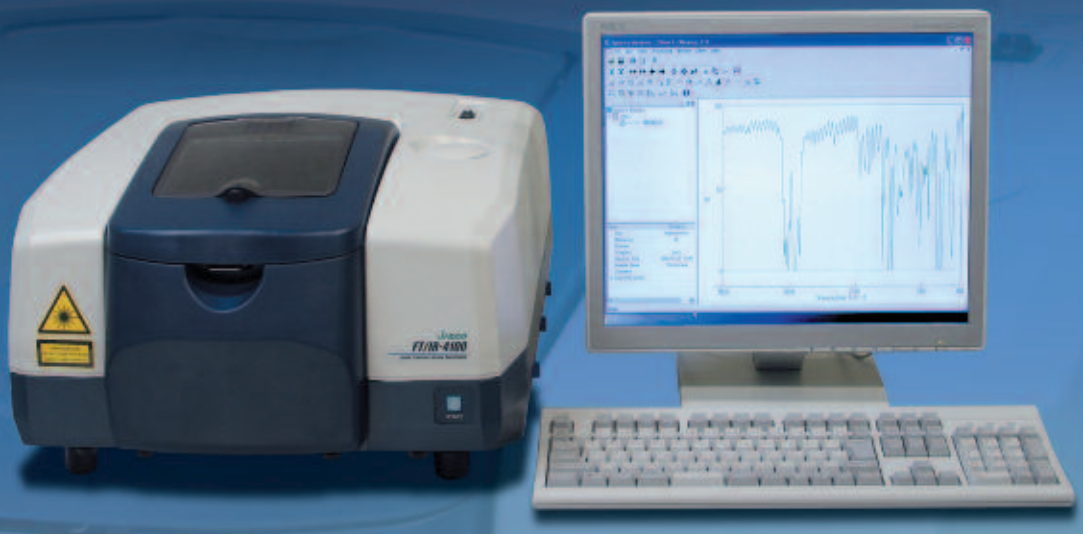
Three levels of electronic signatures, Creation, Review and Approval. Electronic signatures are applied to spectral data files, Canvas templates or documents, instrument parameters and analysis methods.



JASCO

Fourier Transform Infrared

FT/IR-4000 Series



The JASCO FT/IR-4100 and FT/IR-4200 were designed to provide operational features and sensitivity levels found only in more expensive instruments. Innovative technology results in an exceptionally high signal-to-noise ratio. Both models offer excellent operational flexibility and can be easily upgraded to meet new requirements. Expandable capabilities include microanalysis using an FT-IR microscope, IR imaging, and a second detector. The JASCO Quick Start System enables users of all experience levels to measure samples and perform data processing functions quickly and easily with a simple push of a button.

FT/IR-4100

- *Compact size and economical*
- *S/N ratio: 22,000:1*
- *Maximum resolution: 0.9 cm^{-1}*
- *Applicable to FT-IR microscopy and IR imaging*
- *Auto-alignment*
- *Purgeable optics*

FT/IR-4200

- *S/N ratio: 30,000:1*
- *Maximum resolution: 0.5 cm^{-1}*
- *Excellent sensitivity*
- *for varied and complex applications*
- *Measurement of liquid, solid and*
- *gaseous samples*

A full range of sampling accessories

- *IQ Accessory Recognition (option)*
- *Standard purge capability*
- *Use of any commercially available accessory*

DR PRO410-M

Diffuse Reflectance Accessory

ATR PRO450-S

Single Reflection ATR Accessory

ATR PRO470-H

Diamond ATR Crystal with Extreme High Pressure Contact

RAS PRO410-H

Grazing Angle Reflection Accessory

Spectrometers

FT/IR-6000 Series

The JASCO FT/IR-6000 Series offers the highest level of performance in the industry with excellent signal-to-noise specifications. Designed for a wide range of research and development applications, each model is capable of measuring from the Near IR (15000 cm^{-1}) through the Far IR (20 cm^{-1}) using interchangeable beamsplitters and computer controlled sources and detectors. The FT/IR-6300 is equipped with gold optical surfaces for FT-Raman analysis and rapid scan capability as standard. Step scan, high resolution, and full vacuum options are available for all models.

FT/IR-6100

- *S/N ratio: 42,000:1*
- *Maximum resolution: 0.5 cm^{-1}*
- *Capable of measuring from the Near IR (15,000 cm^{-1}) through Far IR (20 cm^{-1})*
- *Step scan, full-vacuum option*
- *Applicable to FT-IR microscopy, IR imaging and Dynamic Imaging*
- *Auto-alignment*
- *Purgeable optics as standard*

FT/IR-6200

- *S/N ratio: 45,000:1*
- *Maximum resolution: 0.25 cm^{-1}*

FT/IR-6300

- *S/N ratio: 50,000:1*
- *Maximum resolution: 0.07 cm^{-1}*
- *Au-coated mirrors for higher throughput*
- *FT-Raman option*

Fully evacuable model

A durable, pressure resistant casing for the interferometer allows an inexpensive upgrade to an evacuable interferometer or fully evacuable system including sample and detector chambers.

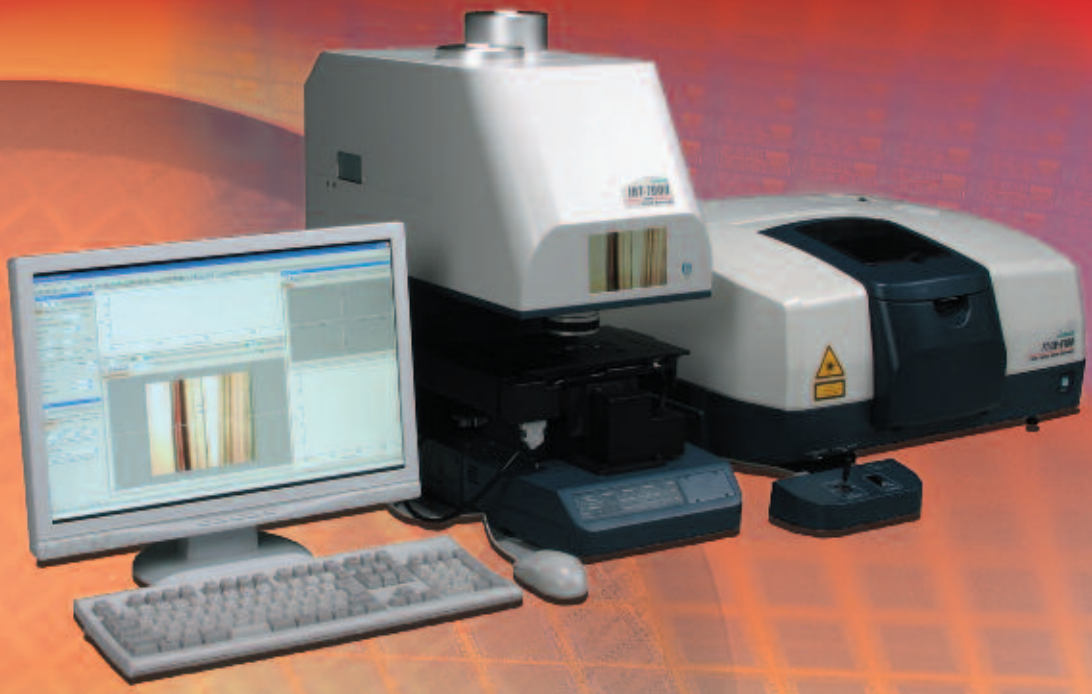
FT-Raman System

The JASCO RFT-6000 FT-Raman accessory is designed for quick, non-destructive FT-Raman analysis of virtually any sample and can be added to any JASCO FT/IR-6000 Series instrument.

FT/IR-6300 with RFT-6000 FT-Raman Accessory

IR Imaging System

IRT-7000 Multi-channel IR Microscope

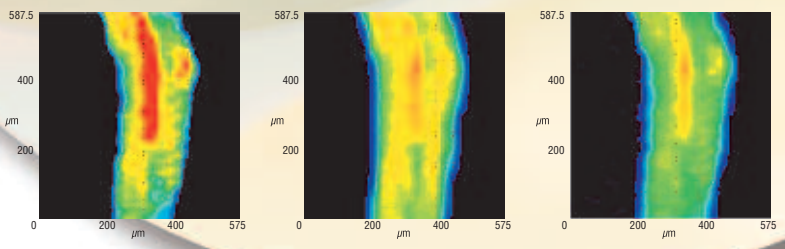


The IRT-7000 Multi-channel Infrared Microscope can be easily interfaced with either the FT/IR-4000 or FT/IR-6000 spectrometer offering an IR Imaging system. The system allows IR Imaging of a specific spatial area with extremely high spatial resolution and excellent sensitivity in a short time. The combination of the FT/IR-6000 and Step scan option offers an advanced capability for dynamic imaging.

- *Wavenumber range 7800-750 cm^{-1} (10000-1900 cm^{-1} optional)*
- *Linear array MCT*
- *1.6 sec collection time for 100 × 100 m, 6.25 m/pixel*
- *4 cassegrain objectives with options for user-interchangeable objectives*
- *2 Detectors - options for user-interchangeable detectors*
- *IQ Monitoring*
- *IQ Mapping*
- *Intuitive, graphical user interface software for spectral measurement and analysis*

Transmittance measurement of multi-layer film

Measurement area: 600 × 600 m
Number of measurement points: 48 × 48
Spatial resolution: 12.5 × 12.5 m
Resolution: 16 cm^{-1}
Accumulations: 16
Collection time: Approx. 4 minutes



Precision Cutting from 10-200 m

SliceMaster

SliceMaster is a compact, easy to use instrument that can create thin sections by cutting film-type samples.

FT-IR Microscope Systems

IRT-5000 FT-IR Microscope

The IRT-5000 is a fully upgradeable FT-IR microscope system capable of spatial resolution of six microns with excellent signal to noise ratio. The standard "IQ Mapping" function allows multi-point, line, area and ATR mapping experiments without moving the sample stage. In addition to standard transmission and reflection measurements, optional ATR and grazing angle reflection objectives expands the capability of the microscope system. Starting with the basic microscope, the system can be fully upgraded to include imaging capabilities as well as user-exchangeable detectors and cassegrain objectives.

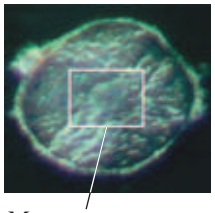
- *Dual detector capability*
- *Multiple objectives - options for user-exchangeable objectives*
- *Automatic aperture control*
- *Optional XYZ sample stage for ATR mapping*
- *Advanced software for mapping and multi-point analysis*
- *IQ Monitoring*
- *IQ Mapping*
- *Intuitive, graphical user interface software for spectral measurement and analysis*

Compact, in-compartment microscope

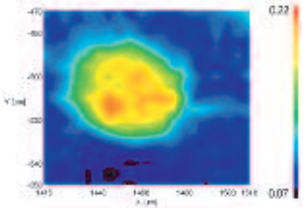
Irtron μ

The Irtron offers unprecedented convenience and ease of use, compatible with the FT/IR-4000/6000 Series.

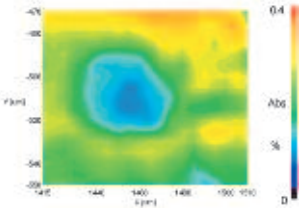
Mapping analysis of hair cross section



Measurement area



Peak height of Amide I



Peak height ratio of lipid and protein

JASCO

UV/Vis/NIR Spectrophotom

V-600 Series

With more than forty years of experience in the design of spectrophotometers, JASCO offers a complete range of UV-Vis/NIR instruments. The V-600 series consists of five distinct models designed to meet a wide range of application requirements. From an innovative optical layout to a simple comprehensive instrument control and data analysis software interface, the V-600 series does not compromise on accuracy, performance or reliability.

V-630 General-purpose UV-Vis

- *Double-beam spectrophotometer with single monochromator*
- *Silicon photodiode detectors*
- *Range 190 to 1100 nm*
- *Fixed bandpass of 1.5 nm*
- *High-speed scanning up to 8,000 nm/min*
- *IQ Accessory and IQ Start provide simplicity and ease of use*
- *USP, EP and JP compliant instrument validation software*

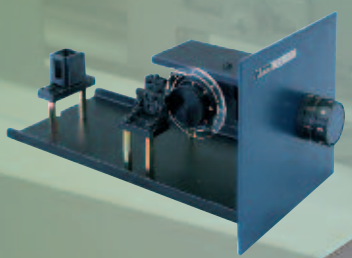
iRM-700
Intelligent remote module

V-630Bio Life Science package

- *Applicable to micro volume samples*
- *Dedicated biological application programs*
  - *Protein/nucleic acid measurement*
  - *Temperature ramping/DNA melting analysis*
  - *Kinetics measurement and analysis*
- *4 basic measurement modes*
  - *Wavelength scanning*
  - *Quantitative analysis – including six different calibrations*
  - *Time course measurement for reaction kinetics*
  - *Fixed wavelength measurement*

Over 50 sampling accessories for gas, liquid and solid samples

TCH-703
8-position turret micro cell holder



4 L 8-position turret micro cell

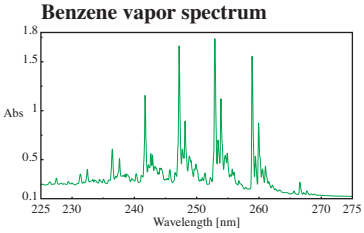
Wash
Cleaning tool for micro cells/cuvettes

eters

V-650
High resolution UV-Vis

- Linearity up to 4 absorbance
- Range 190 to 900 nm
- Variable bandpass to 0.1 nm

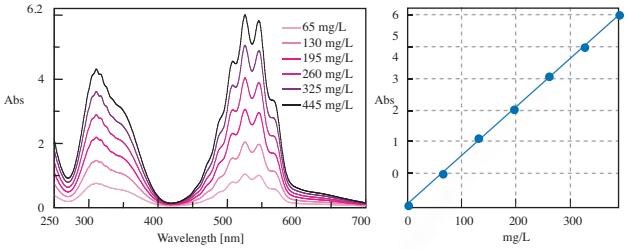
Benzene vapor spectrum



V-660
Exceptional stray light rejection

- Double monochromator
- Low stray light below 0.00008%
- Linearity up to 6 absorbance
- Range 187 to 900 nm
- Variable bandpass to 0.1 nm

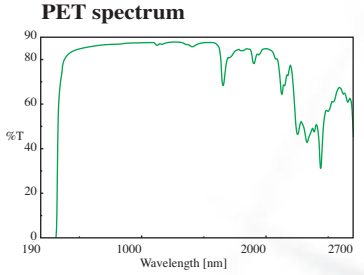
$KMnO_4$ spectra and linearity up to 6 absorbance



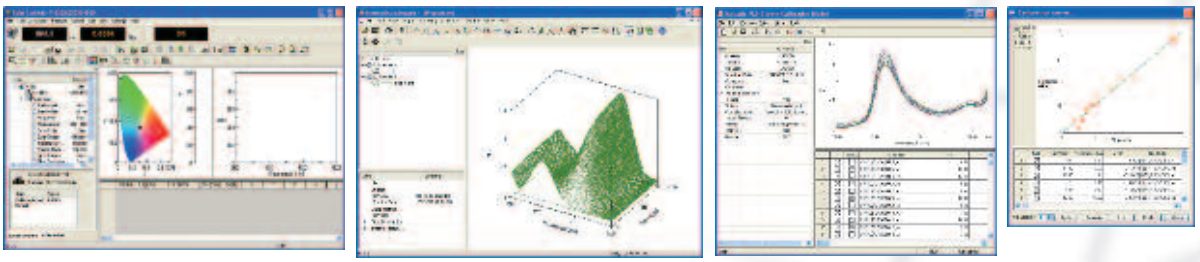
V-670
Expansion into the NIR region

- Unique single monochromator system
- Photomultiplier tube detector for UV-Vis region
- Peltier cooled PbS detector for NIR operation
- Range 190 to 2700 nm (3200 nm option)
- Variable bandpass to 0.1 nm (UV-Vis)

PET spectrum



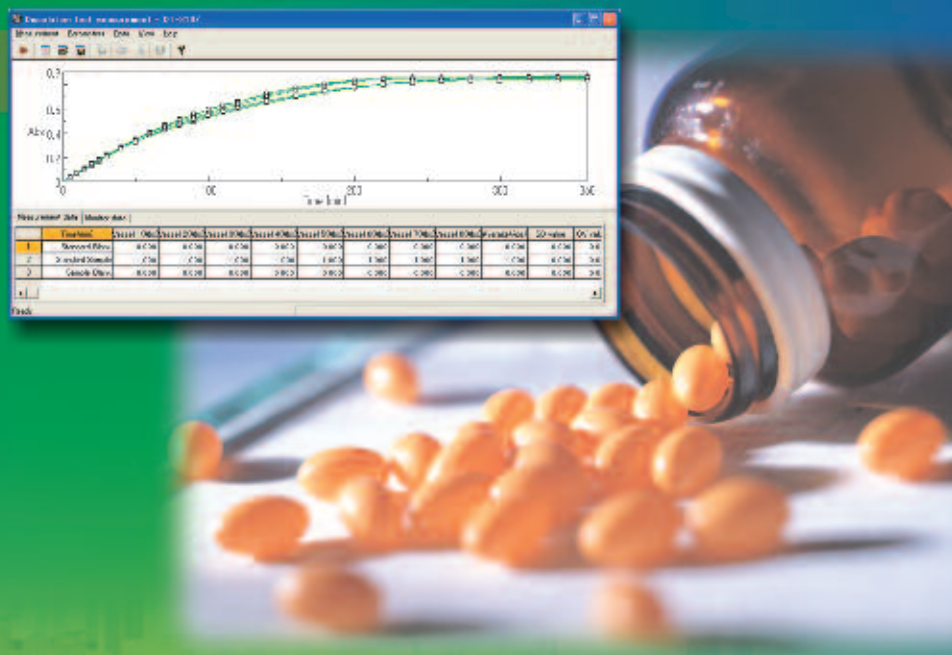
Over 20 dedicated software programs to support specific analysis applications



JASCO

Dissolution Tester

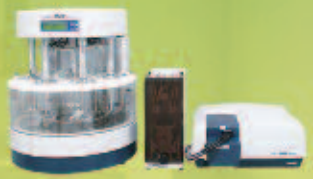
DT-810



The DT-810 Dissolution Tester is fully automated and designed for flexibility to provide dissolution testing of up to 8 samples with either the paddle method (standard) or the rotating basket method (option). The unique circular design provides uniform water temperature while utilizing a round heating element. The Direct-Center™ automatic centering mechanism provides hands-free positioning of the dissolution vessels and drive shafts for accurate dissolution tests with high reproducibility.

Flow System

This system integrates the DT-810 with an 8 position flow-cell accessory and a UV-Vis spectrophotometer. A peristaltic pump continuously circulates sample solution between the 8 dissolution vessels and the flow cell accessory.



Fraction System

This system integrates a fraction collector and the pumping unit for off-line testing. As many as 12 sets of samples with a volume of 20 mL or less can be collected from each dissolution vessel at pre-set intervals.

Fraction Flow System

This system combines the fraction collector and a flow cell installed in a UV-Vis spectrophotometer. Samples from the dissolution vessels are collected in test tubes and sample aliquots are analyzed by the UV-Vis .

Automated Filtration System

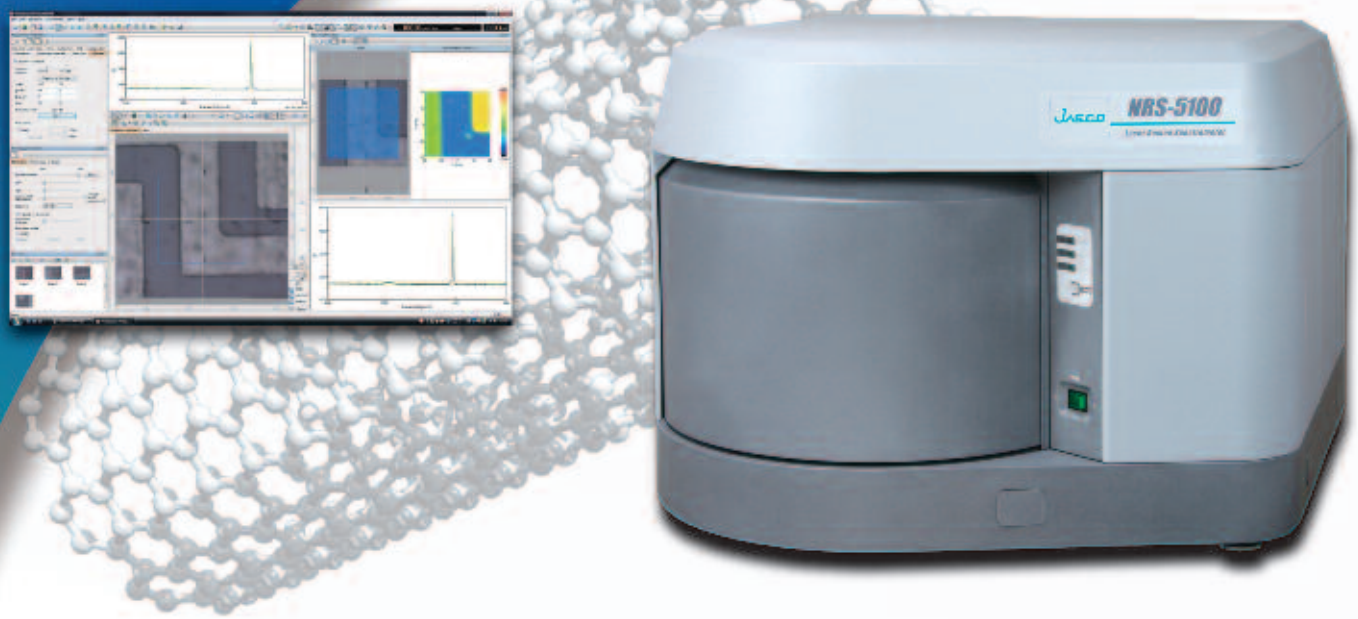
This system includes an 8-position syringe pump and an automated filter changer to provide automatic filtration of sample solutions from all 8 vessels. After each sampling, filters are automatically exchanged.

Amber Bath and Vessel (option)

Now available as option with amber bath and vessel lids for light sensitive formulations.

Raman Spectrometers

NRS-5000/7000 Series



The performance and functions expected on a micro-Raman spectrometer are all provided with the NRS-5000/7000 Series Raman systems, assuring consistent performance for rapid acquisition of high quality data with automated system control and minimal optical adjustments. For application expansion, an automated multi-grating turret, up to 2 detectors and a maximum of 8 lasers ranging from the UV through the NIR are capable of integration with the instrument system, all optical components are PC controlled for maximum flexibility with minimum user interaction.

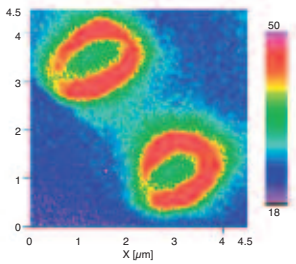
NRS-5000 Series

- *Maximum Resolution:*
  1 cm^{-1}/ 0.4 cm^{-1} (optional)
- *Laser wavelength range: UV - NIR*
- *Wavenumber range:*
  50 to 8000 cm^{-1} (NRS-5100)
  10 to 8000 cm^{-1} (NRS-5200)

NRS-7000 Series

- *Maximum Resolution:*
  0.7 cm^{-1}/ 0.3 cm^{-1} (optional)
- *Laser wavelength range: UV - NIR*
- *Wavenumber range:*
  50 to 8000 cm^{-1} (NRS-7100)
  5 to 8000 cm^{-1} (NRS-7200)

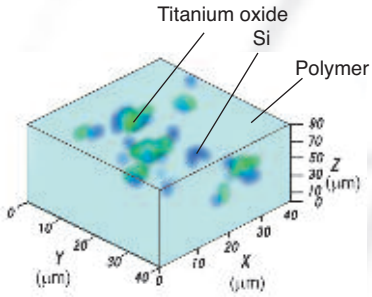
High-resolution imaging using the SPRIntS high speed imaging system



Raman Imaging

The matrix area surrounding a 1.5 μm diameter hole formed on a Si wafer was measured using a 40 nm stepping function. The 1.5 μm feature could be easily observed in the Raman image.

Accurate 3-D Imaging by the distortion-free VertiScan function



3-D Imaging

The VertiScan function acquires depth imaging data from a sample using the confocal capability of the Raman spectrometer and creates a 3-D image from the Raman intensity data.

Spectrofluorometers

FP-8000 Series

Equipped with the latest innovative technology, the JASCO FP-8000 series was designed to obtain fluorescence spectra with the highest sensitivity, the fastest scan speeds and excellent analysis-oriented functionality. To meet the demands of research and development applications, a wide array of accessories are available for integration with the FP-8000 instruments and supported by the user-friendly Spectra Manager™ II software platform. The various instruments of the FP-8000 series, covering a wide range of applications, offers the best solution for all your needs, from advanced materials analysis to biological research requirements.

- ***Highest sensitivity (>5000:1 (RMS), FP-8500)***
- ***Fastest scan speed in the world.***
- ***Wide dynamic range (> 6.5 orders of magnitude, FP-8500)***
- ***Standard Auto-Gain and Auto-SCS***
- ***Automatic higher-order diffraction cut filter***
- ***Rapid 3D spectra measurement***
- ***Phosphorescent lifetime measurements up to 1 msec***

FP-8200

For general use, especially for routine fluorescence analysis.

- *Wavelength range on both Ex and Em*
  200 - 750 nm / Option: 200 - 900 nm
- *Wide dynamic range; greater than 6 orders of magnitude*
- *Automatic higher-order diffraction cut filter (option)*
- *Select from iRM or Spectra Manager PC control*

A variety of accessories for temperature control and specific application requirements

A wide variety of accessories and control/analysis programs are designed to integrate analysis methods for various samples and application requirements ranging from biochemical/bioscience to materials research and beyond.

- *Thermostatted cell holders for single or multiple samples*
- *Stopped flow accessory*
- *Automatic titration accessory*
- *Microplate reader*
- *Auto-sampler and sipper*
- *Polarizer for fluorescence anisotropy*
- *One-drop measurement unit*
- *Liquid nitrogen cooling unit*
- *Cryostat holder*
- *Film holder*
- *Integrating sphere*
- *High temperature powder cell unit*

FP-8300

Versatile model, specifically designed for bio-applications, such as stopped flow, fluorescence anisotropy and auto-titration applications.

- *Wavelength range on both Ex and Em*
  200 - 750 nm / Option: 200 - 900 nm
- *Wide dynamic range greater than 6 orders of magnitude*
- *High sensitivity (>2800:1 (RMS), band width 5 nm)*

FP-8500

Research model with the highest performance in the world. Optimized for the analysis of solid samples and advanced materials.

- *Wavelength range on both Ex and Em*
  200 - 750 nm / Option: 200 - 850 nm
- *Wide dynamic range greater than 6.5 orders of magnitude*
- *Highest sensitivity in the world (>5000:1 (RMS), band width 5 nm)*
- *Fastest spectral scanning available (60,000 nm/min)*

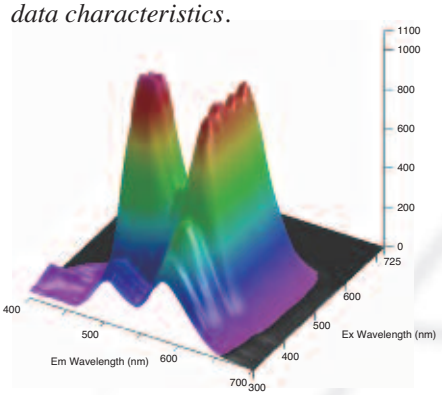
FP-8600

NIR model for evaluation of new materials such as carbon nano-tube, NIR fluorescent dyes, up-conversion fluorescent glasses, etc.

- *Wavelength range*
  Ex: 200 - 850 nm, Em: 200 - 1010 nm
- *Fast spectral scanning (Ex: 60,000 nm/min, Em: 120,000 nm/min)*

Rapid 3D Spectra Measurement

3D spectra measurement is available for all models of the FP-8000 series. The fastest scan speed of 60,000 nm/min for the FP-8500/8600 offers 3D spectral measurement in the shortest time available for any instrument in this class. The analysis software offers a variety of processing methods to easily display the relevant data characteristics.

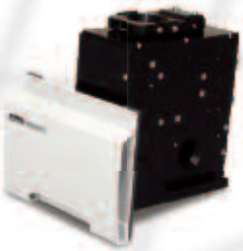


3D spectra measurement of fluorescent orange color plate

SAF-850

One-drop measurement unit

The SAF-850 (FP-8200) or SAF-851 (FP-8300/8500/8600) One-drop measurement unit is a dedicated module for rapid measurements of micro-volume samples. Simply place a droplet of sample on the disk cell to obtain a measurement of the sample.



Circular Dichroism

J-815 Spectrometer

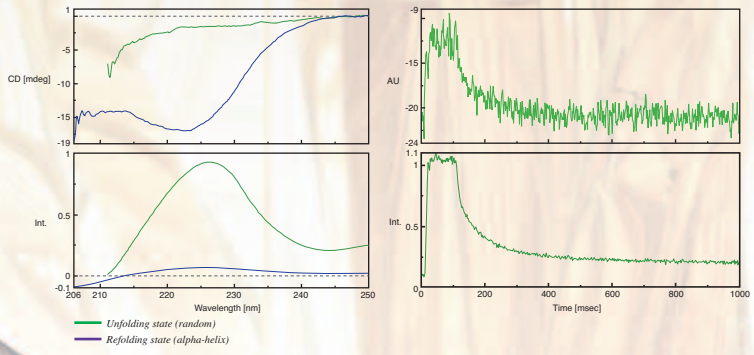
The J-815 Circular Dichroism (CD) spectrometer offers the best far-UV performance combined with a range of flexible accessories to meet any required application. With 40 years of CD innovation, JASCO is the world leader in Chiro-optical spectroscopy.

- *Compact benchtop design*
- *Air cooled 150W Xenon lamp*
- *Highest Signal:Noise ratio*
- *Range of precise temperature control accessories*
- *Automated titration and stopped-flow accessories*
- *Spectra Manager™ II software for control and data analysis*
- *Spectra Manager CFR option for 21 CFR 11 compliance*
- *Fluorescence emission monochromator/detector (option)*
- *High throughput sampling accessories*

SFS-490 Series

High-speed stopped-flow systems

Refolding measurement of Cytochrome



Cytochrome C in its unfolded state, denatured in the presence of guanidine hydrochloride, is refolded by dilution of the guanidine hydrochloride with a sodium phosphate buffer. This refolding process, which is completed in around 300 msec, is monitored by simultaneous CD/Fluorescence measurement with stopped flow dilution.

Digital Polarimeter

P-2000

The P-2000 is designed as a customizable, multi-option polarimeter for a range of applications and budgetary requirements. The instrument system can also be field upgraded as application requirements change. By selecting the most suitable combination of optical elements, the instrument provides a wide range of analytical wavelengths from UV-Vis to NIR.

- *Two graphical user interfaces: iRM-800 and Spectra Manager™ II*
- *Up to two light sources can be installed. Available light sources: WI, Na and Hg*
- *IQ accessory recognition*
- *Automatic recognition of light sources and filters*
- *High response speed of 6°/sec*
- *Wide dynamic detection range of up to ±90°*
- *Minimum readable angle as low as 0.0001°*
- *Instrument performance validation (standard)*
- *CFR compliant option*

RSC-200
Cylindrical cell holder

SHP-201P / SHP-201
Peltier sipper / Water thermostatted sipper

PTC-262
Peltier cell holder

Ultra High Performance L

Achieve the absolute maxinun in speed an

X-LC®

The JASCO UHPLC (X-LC) series is an extreme high pressure liquid chromatography system that is designed to operate at pressures approaching 100 MPa for either gradient or isocratic separations. X-LC provides researchers with a powerful tool to use small particle columns while providing efficiency and speed that was previously not possible in a commercial HPLC. All of this while retaining the ability to run traditional HPLC methods.

X-LC 3120FP
Fluorescence Detector

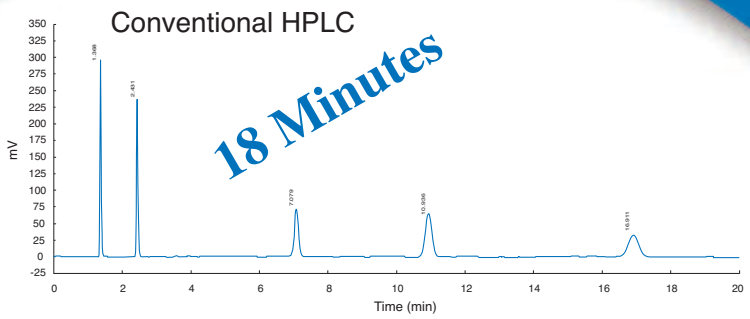
The X-LC 3120FP Fluorescence detector, the industry's most sensitive detector, has an excellent signal-to-noise ratio with proven stability, with a wide wavelength range (220-700 nm) for both excitation and emission. Advanced optics, holographic concave diffraction gratings, and non-spherical mirrors are cleverly incorporated in a compact package resulting in extremely efficient and reliable fluorescence detection.

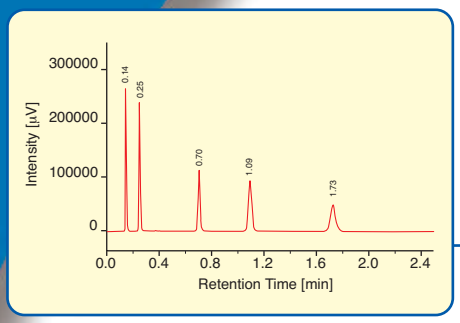
X-LC 3159AS
Intelligent Autosampler

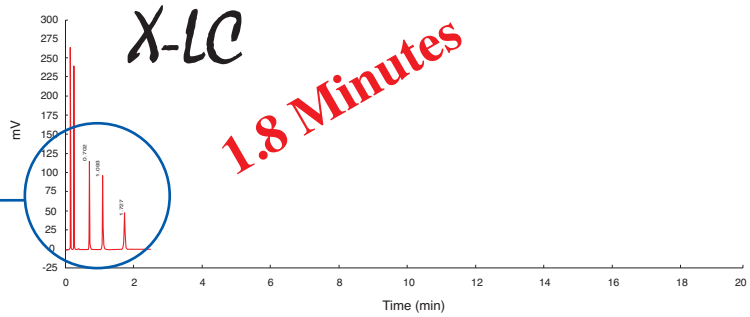
The X-LC 3159AS autosampler is a fully automatic sample injection system with a minimum injection interval of 30 seconds to enable greater productivity and the highest possible level of precision. Sampling flexibility is unparalleled with up to 768 well positions (two 384-well microplates) as an option for laboratory automation and combinatorial chemistry. Also available is a micro-vial rack (224 vials) or the standard rack (120 vials) for 2 mL vials.

iquid Chromatography

d efficiency







X-LC 3185PU/3080PU

Solvent Delivery Pump

The X-LC 3185PU/3080PU solvent delivery unit is designed to operate at pressures approaching 100 MPa for either gradient or isocratic elution modes. The SSQD (Slow Suction, Quick Delivery) pumping system was designed to provide durable, accurate and pulse-free operation. Flow range 1 L/min to 2 mL/min (3185PU), 1 L/min to 5 mL/min (3080PU).

X-LC 3070/3075UV

UV/Vis Detectors

To ensure the most sensitive and stable X-LC detection, these models utilize a Czerny-Turner monochromator covering a wide wavelength range from 190 to 900 nm with deuterium and halogen lamps (X-LC 3070UV) and from 190 to 600 nm with a single deuterium lamp (X-LC 3075UV). The excellent optical characteristics and program capabilities of the X-LC 3070/3075UV are combined in one compact package, making the X-LC 3070/3075UV the optimal tool for X-LC UV/Vis detection. To efficiently detect the much narrower peaks that are obtained using X-LC, the X-LC 3070/3075UV detectors are capable of data acquisitions at frequencies up to 100 data points per second.

X-LC 3195CD

Circular Dichroism Detector (CD)

The only CD detector for UHPLC!

The X-LC 3195CD detector uses the same technology applied in conventional CD spectropolarimeters. This detector enables highly sensitive and selective analysis of chiral compounds. It can simultaneously determine both CD and UV absorption of the sample in the same cell and determines optical isomer separation and purity. To meet X-LC requirements, the 3195CD features a high-speed sampling rate of 50 data points/sec. for both CD and UV signals. Its specially designed flow cell minimizes peak broadening.

X-LC 3110MD

Photo Diode Array Detector (PDA)

The X-LC 3110MD PDA detector offers maximum sensitivity with ultra high-speed data acquisition and processing. Designed specifically for use in ultra high-speed separations arising from UHPLC applications, the X-LC 3110MD is on the cutting edge of PDA detector development. Display functions such as 3-D chromatograms, contour plotting, peak purity, multi-wavelength chromatograms and spectral search are all supported.

JASCO

High Performance Liquid

LC-2000Plus Series

A versatile series of components offering unique flexibility to build isocratic and high/low pressure gradient systems for routine and specialized applications.

- *Compact design*
- *Modular components offering PC system or direct keypad control*
- *Micro, analytical and preparative solvent delivery systems*
- *Wide range of detectors*
- *50, 100 and 120 position autosamplers*
- *Solvent switching, mixing and degassing*
- *Column switching and temperature control*
- *32 bit software package for control and full data analysis*

Chromatography

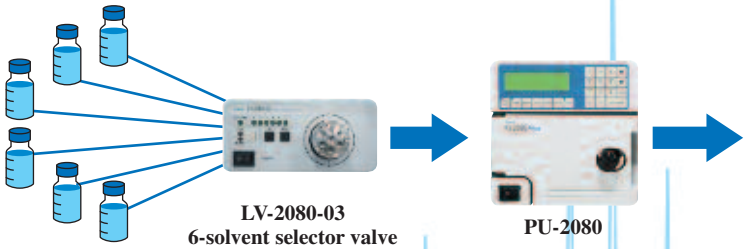
Solvent Delivery Systems

Wide range of solvent delivery systems for isocratic, binary, ternary and quaternary gradient applications

PU-2080 Analytical

- *Flow range of 1 µl/minute to 10 ml/minute*
- *Flow precision ±0.1%*
- *Versatile time programming for high and low pressure gradient elution, flow rate, solvent selection, etc.*
- *Bioinert version, PU-2080i, for applications such as biological separations, without metallic material contact*

Solvent switching system



LV-2080-03
6-solvent selector valve

PU-2080

PU-2085 Semi-micro

- *Gradient flow rates from 1 µl to 4 ml/minute*
- *Ideal for 1-2 mm columns and LC-MS applications*
- *requiring low flow rate gradient elution*

PU-2086 Semi-preparative

- *Flow rate up to 20 ml/minute*
- *Flow precision ±0.2%*

PU-2087 Preparative

- *Flow rate up to 50 ml/minute*
- *Flow precision ±1%*

PU-2089 Quaternary

- *Low pressure gradient pump with built-in 4 line degasser and mixing module*
- *Flow rate 1 µl to 10 ml/minute settable in 1 µl steps*
- *Flow accuracy ±1%*
- *Stepwise and linear gradient mixing*

High Performance Liquid

LC-2000Plus Series

Wide Range of Detectors

UV-2070/2075 UV/Visible

- *Range 190-900 nm (UV-2070), 190-600 nm (UV-2075)*
- *Versatile programming with 10 program files*
- *Storage of 10 spectra and baselines*
- *'On the fly' scanning capability*
- *Excellent baseline stability*
- *Lamp-off timer to extend lamp life*

UV-2077 Multi-wavelength

- *Simultaneous monitoring of 4 different wavelengths*
- *Range 200-600 nm with 1 nm interval*
- *Low noise, stable baseline*
- *Spectral acquisition without interrupting chromatography*

MD-2018 Photodiode Array

- *Range 190-900 nm with 1024-element diode array*
- *PC communication via USB 2.0*
- *3D chromatograms*
- *Virtual channel*
- *Contour plots*
- *On-peak spectrum*
- *Maximum absorbance spectra*
- *Multiple chromatogram display, up to 12*
- *Ratio chromatogram*
- *Peak purity calculation*
- *Spectra library creation and search*

FP-2020 Fluorescence

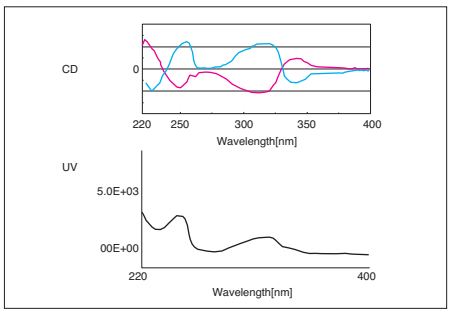
- *Excitation and emission range of 220-700 nm (220-900 nm with optional PMT)*
- *Time programming of wavelength, response range and spectral scan providing peak measurement at optimum excitation and emission wavelengths*
- *Rapid scan for spectral acquisition of excitation and emission spectra without interrupting chromatographic elution*

Chromatography

CD-2095 Circular Dichroism

JASCO has developed the world's first Circular Dichroism based detector for Chiral Chromatography. Until recently, optical rotation detectors have been used exclusively for enantiomer detection. The new CD-2095 offers increased sensitivity and additional peak purity information.

- *Simultaneous CD, UV and g factor signals*
- *Ratio of CD and UV signals, the g factor, gives direct determination of optical isomer separation and purity*
- *Spectral scanning with Spectra Manager™*
- *Up to 100× greater sensitivity than ORD*
- *High pressure cell for SFC*



Simultaneous CD and UV detection of Flavanone

OR-2090 Chiral

- *Low noise and drift*
- *Hg/Xe lamp to cover wavelength range from UV to visible*
- *Patented flow cell for low dispersion*
- *Artifact free design*

RI-2031 Refractive Index

- *Semi-preparative flow rate to 50 ml/min*
- *Low noise, stable baseline*
- *Automatic time programming*
- *Temperature stabilization from 10˚C above ambient to 45˚C*

CL-2027 Chemiluminescence

- *Detection of ultra-trace amounts*
- *Unique flow cell design for high sensitivity*
- *Time programming for detection of multiple peaks*
- *Temperature stabilization from 10˚C above ambient to 60˚C*

High Performance Liquid

LC-2000Plus Series

Versatile Autosamplers

Fully automatic, intelligent sample injection systems for increased productivity and analytical precision

AS-2059

- *120 standard 2ml vial capacity*
- *192 well positions (2 × 96 well microplates) for combinatorial chemistry or 224 microvials*
- *Excellent reproducibility of 0.2% RSD for 5 µl to 100 µl injection volumes*

AS-2055/2057

- *50 position unit with high reproducibility specification*
- *Built-in Peltier cooling and heating unit for AS-2057 model*

AS-2050/2051

- *100 position unit with high reproducibility specification*
- *Built-in Peltier cooling and heating unit for AS-2051 model*

Column Ovens

CO-2060/2065

- *Intelligent module*
- *Range –15˚C below ambient to 80˚C (CO-2060)*
- *Range +10˚C above ambient to 80˚C (CO-2065)*
- *Accuracy 0.1˚C*
- *Accepts column lengths to 40 cm*

CO-2067

- *Aluminium block design*
- *Range –15˚C below ambient to 65˚C*
- *Accommodates 2 columns up to 25 cm*

Chromatography

Mixers

Low pressure gradient mixers

LG-2080-02

- *3 solvent mixing module*

LG-2080-04

- *4 solvent mixing module*

High pressure gradient mixers

MX-2080-31

- *3 solvent mixer with 2 mixing lines*
- *Higher mixing capability for a stable baseline*

MX-2080-32

- *3 solvent dynamic mixer with optional semi-micro and semi-prep mixers*

Degassers and valves

DG-2080-53

- *In-line degasser eliminates dissolved gases from 3 solvent lines*

DG-2080-54

- *4 line degasser*

HV-2080-01

- *A 2-position switching valve for use in flow line switching*

LV-2080-03

- *A 6-solvent selector valve used with the LC-2000 Series pumps*

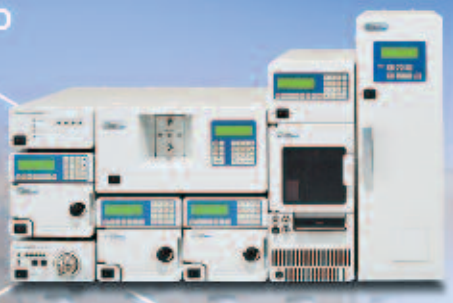
High Performance Liquid

LC-2000Plus Series

HPLC Systems

Amino Acid Analysis

- *LC-2000Plus system dedicated to the separation of protein hydrolysate and physiological amino acids*
- *OPA (orthophthaldehyde) or Ninhydrin post-column derivatization*

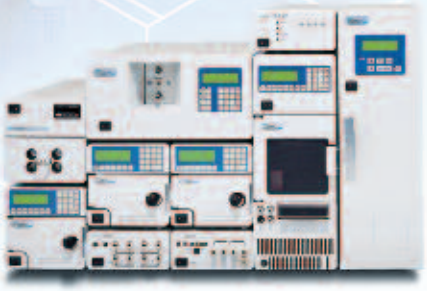


Sugar Analysis

- *High sensitivity and selective detection using post-column derivatization and fluorescence detection*
- *Analysis of reducing sugars, sugar alcohol, aminosugar and oligosaccharides*

Carbamate Analysis

- *Routine simultaneous analysis of at least 11 carbamate types*
- *Uses OPA post-column derivatization method*
- *Carbamates separated on Carbamatepak column packed with silica - ODS resin*
- *Gradient elution technique with FP-2020 fluorescence detection*



SFC/SFE

- *Separation and sample preparation applications*
- *Flow rate range up to 10 mL/min*
- *Replaces normal phase chromatography for environmental analysis procedures*
- *System includes Peltier thermostatted CO_2 delivery pump and pressure programmable Back Pressure Regulator*
- *Chiral SFC available*

Preparative SFC/SFE

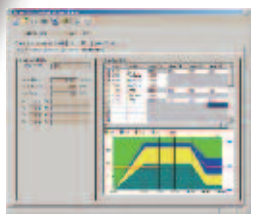
- *Separation and purification from hundreds of milligrams to several grams with up to 30 mm I.D. columns*
- *Preparative scale CO_2 delivery up to 120 mL/min*
- *Fraction collection of up to 8 fractions*
- *Dedicated software for high throughput stack injection*
- *A wide range of detectors including UV-Vis, Multi-channel and CD*

Chromatography

Chromatography Data System

ChromNAV

- *Controls JASCO X-LC Series, LC-2000 Series, LC-1500 Series, and more*
- *Controls up to four systems simultaneously*
- *Acquires data at a sampling rate of 100 Hz and is compatible with X-LC detectors.*
- *ChromNAV CFR is available for 21 CFR Part 11 compliance.*

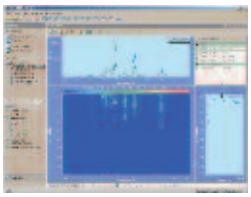


System Control and Data Acquisition

ChromNAV can control up to four systems simultaneously. The LC-NetII/ADC is the hardware interface between your PC and the system components. Up to four channels of analog data can be acquired by each LC-NetII/ADC.

Powerful Data Analysis Functions

ChromNAV includes all standard chromatography calculations, such as reliable peak integration and identification, powerful and easy quantification, a quick user-defined reporting format and versatile data conversion for data export. Peak calculation results can be sent to Microsoft® Excel automatically.



PDA Detector Control and Data Analysis

PDA data analysis is a standard feature in ChromNAV. Some useful tools for manipulating spectra, such as peak purity calculation, spectrum search, etc., are fully supported. Installed as part of the ChromNAV software package, JASCO's Spectra Manager softwear is provided to perform advanced spectral analysis.

On-flow Spectra Using Spectra Manager™

A powerful cross-platform software package, Spectra Manager is standard for rapid spectral scanning using UV, 4 ch-UV, Fluorescence and Cicular Dichroism detectors and data processing functions.

Optional GPC Add-on

The optional GPC package allows molecular weight distribution calculations. Molecular weight distribution is displayed together with the calculation results and the chromatogram.

ChromNAV CFR

Users and Privileges

User privileges can be set at different security levels.

Electronic Signature

Three types of electronic signatures (Created, Reviewed, and Approved) are available. The customer cannot modify any approved data or methods.

Audit Trails

The Audit Trail function records and archives all operations including any file modifications.

● Specifications are subject to change without notice.

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ISO 9001 Certified

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JASCO Corporation

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