

PEGASUS[®] GC-HRT⁺



LECO
EMPOWERING RESULTS

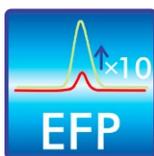
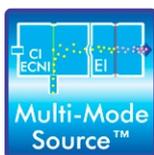
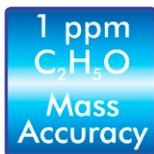


LECO's PEGASUS® GC-HRT⁺

*The ultimate analytical instrument
for increased confidence in the
identification of components in
your most complex samples.*

*For complete patent information,
see specification sheet 209-212-001*

Build Your Confidence Further



Industry Advantages

- Mass Resolution up to 50,000 gives you the capability to distinguish compounds in coeluting peaks
- 1 ppm mass accuracy reduces molecular possibilities by a factor of 3 versus industry standards
- Shorten your identification time with the industry's best deconvolution for both EI and CI data

Driven by Fundamental Technologies

- Folded Flight Path[®] (FFP[®]) enables high resolution analysis with selectable 20 or 40 meter long flight paths
- High Resolution Deconvolution[®] (HRD[®]) uses a statistical approach to deconvolute analytes to the limits of mathematics
- KADAS[®], a novel data acquisition system, is based on ion statistics and ensures a high level of TOF data quality
- New Encoded Frequent Pushing[®] (EFP[®]) allows increased sensitivity

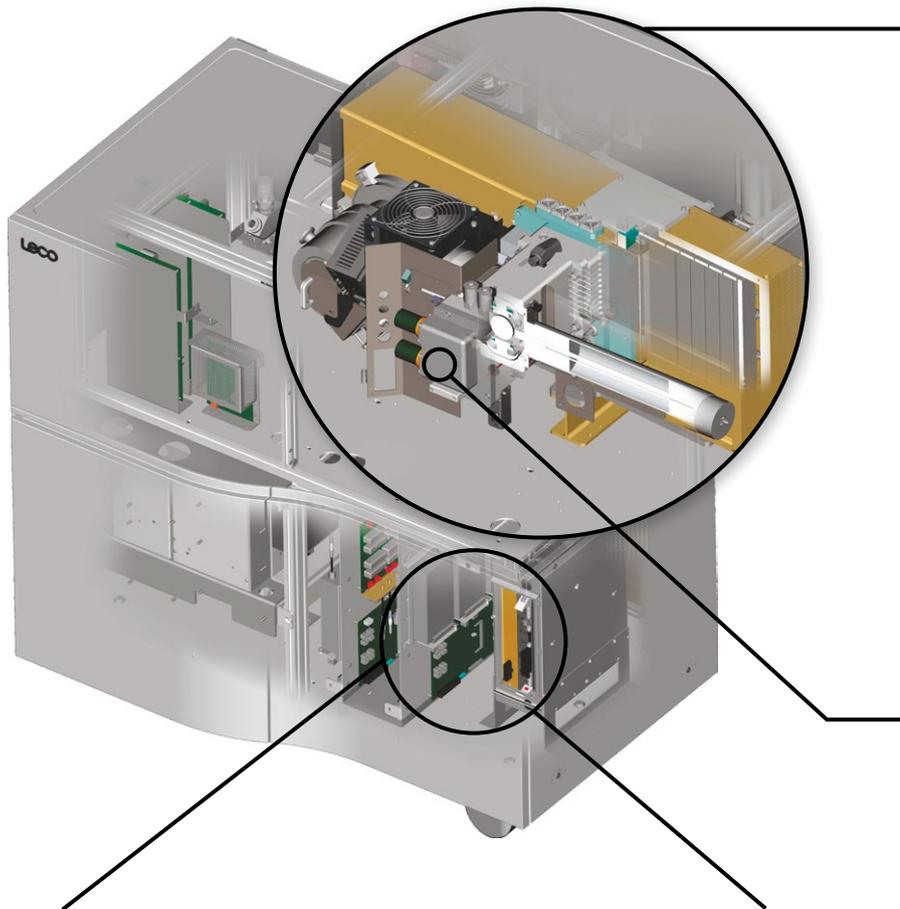
Leading to Benefits

- Identify compounds via library searches, combined with accurate masses on molecular and fragment ions
- Create and use accurate mass spectral databases to enhance the quality of your hits
- Mass defect plots allow you to quickly focus on compounds of interest
- Monitor, regulate, use, and setup instrument with automated software tools
- Multi-Mode Source[™] (MMS[™]) combines EI, Positive Chemical Ionization CI, and Electron Capture Negative Ionization (ECNI)
- Standard He and H₂ carrier gas support
- Automated tuning and instrument setup
- Unparalleled sensitivity in a high resolution GC-TOFMS system

1 ppm accuracy and 50,000 resolution at 200 spectra/second allows you to **win the fight against coelution** with a high degree of confidence



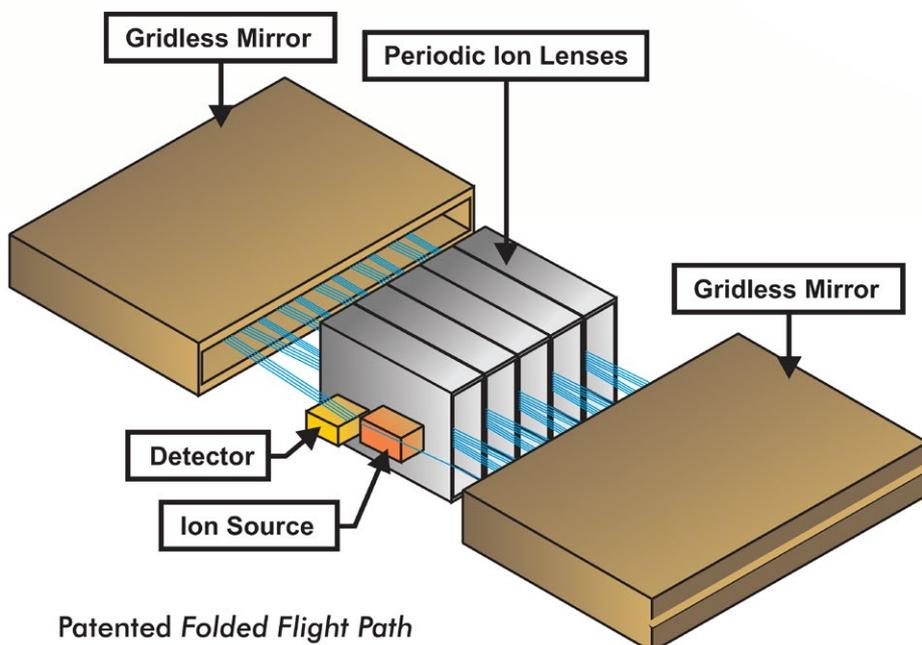
PEGASUS® GC-HRT+ Hardware



- FFP® provides high order TOF focusing which delivers high resolution sensitivity and accommodates for typical TOF ion beam dispersion
- Transfer ion optics to maximise transmission into the unique mass analyser
- Pneumatic gate valve to quickly perform front-end maintenance without venting the mass analyser
- Novel Gain Optimisation algorithm maximises sensitivity and dynamic range
- Dual Orthogonal Acceleration focuses more ions into the analyser
- HR-EI or Multi-Mode Source™ (MMS™)

Learn more in the MMS application note, 203-821-630

- New Encoded Frequent Pushing® – Patented method of pulsing the Orthogonal Accelerator multiple times to increase duty cycle (x10)
- KADAS® – Patented ion statistics-based data acquisition system, which dramatically reduces noise, ensures mass accuracy, and reduces file size
- Statistical models are used to characterise the probability of a single ion event and acquire only meaningful analytical data; KADAS is also designed to enhance spectral acquisition rates



Patented *Folded Flight Path*

For more information on EFP refer to white paper 209-066-018.

PEGASUS® GC-HRT+ Software

Identification Grading System™ (IGS™)

Increase confidence in your identification challenges with intuitive ChromaTOF® brand software. LECO's *Identification Grading System (IGS)* feature eases data review by allowing users to quickly see, justify, have confidence in, and report on which chemicals are in a particular sample. This in turn allows a user to make confident decisions on what to do next.

Stop Guessing What is in Your Sample: KNOW

The IGS gives a grade to a particular identification based on 4 criteria:

- (1) Presence and accurate mass of a molecular ion
- (2) Presence and good correlation of a spectral similarity score from a curated library
- (3) Accurate masses of sensible potential formulae of fragmented ions corresponding to a spectral library hit
- (4) Matching retention index from the library hit

The higher the value of the grade the more confident you can be in your identification.

IGS™ Scoring Configuration

Enable Similarity Check
Minimum Similarity for Pass Rating (0 - 999): 800
Minimum Valid Similarity (0 - 999): 700

Enable Fragment Ion Check
Minimum Abundance (100 - 998): 300
Required Mass Accuracy: 5 +/- Mass Window mDa ppm

Enable Molecular Ion Check
Minimum Library Abundance (0 - 998): 100
Required Mass Accuracy: 5 +/- Mass Window mDa ppm

Enable Retention Index Check
Retention Index Window: 80

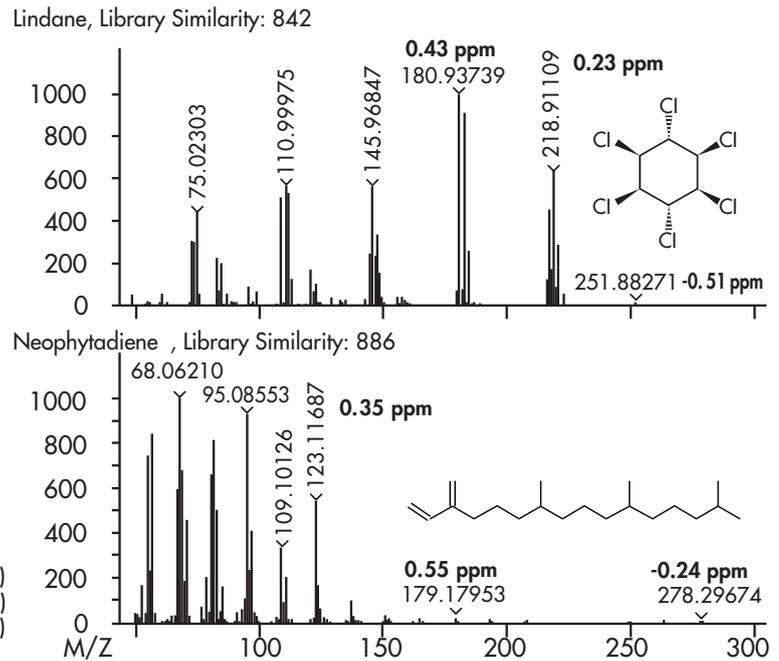
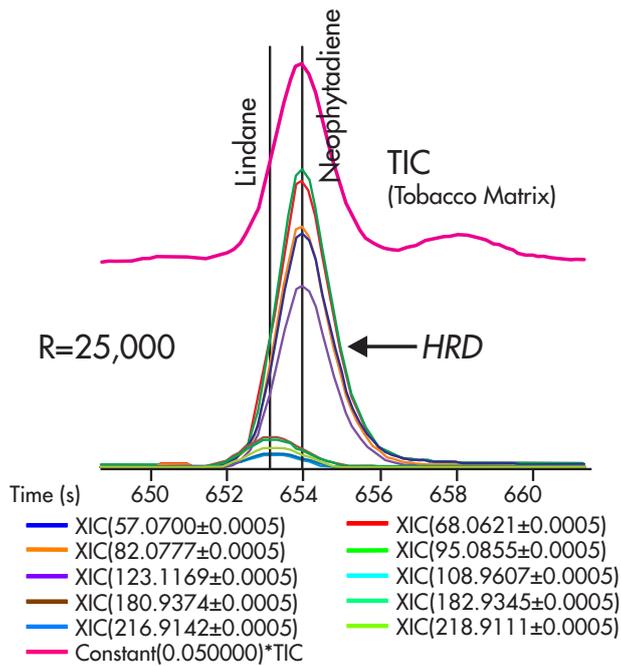
The IGS uses all the available chemical information generated from the Pegasus GC-HRT+ 4D to add confidence to your unknown identification process.

How IGS is set up and used in the software

Hit	Name	Library	IGS Score	IGS Concerns	Similarity	CAS
>1*	Secbumeton	replib	4.0		804	26259-45-C
2	Secbumeton	mainlib	4.0		795	26259-45-C
3	Secbumeton	Wiley Pesticides v2	3.0	RI:0	829	26259-45-C
4	Sebuthylazine-A (-Cl, +	Wiley DesignerDrugs 2	3.0	RI:0	802	26259-45-C
5	1,3,5-Triazine-2,4-dian	mainlib	2.0	SS:0 ; RI:0	669	13532-26-E
6	Terbumeton	Wiley Pesticides v2	2.0	SS:0 ; RI:0	579	33693-04-E
7	DOF 2PROP	Wiley DesignerDrugs 2	1.0	SS:0 ; RI:0 ; M+:0	566	
8	Terbumeton	replib	0.5	SS:0 ; RI:-	590	33693-04-E
9	Terbumeton	replib	0.5	SS:0 ; RI:-	552	33693-04-E
10	1,3,5-Triazine-2,4-dian	mainlib	-0.5	SS:0 ; RI:0 ; M+:-	629	55702-51-7
11	Atraton	Wiley Pesticides v2	-0.5	SS:0 ; RI:0 ; M+:-	622	1610-17-9
12	1,3,5-Triazin-2(1H)-one	mainlib	-0.5	SS:0 ; RI:0 ; M+:-	616	7374-53-0

Inside of LECO's ChromaTOF software, the hit table which links directly to an individual deconvolution result. The highest IGS score is used to prioritize this table. The top hit goes into a full summary of all identification results. This table can use multiple libraries (as shown, even user created libraries) and each individual result can be analysed and compared by the operator.

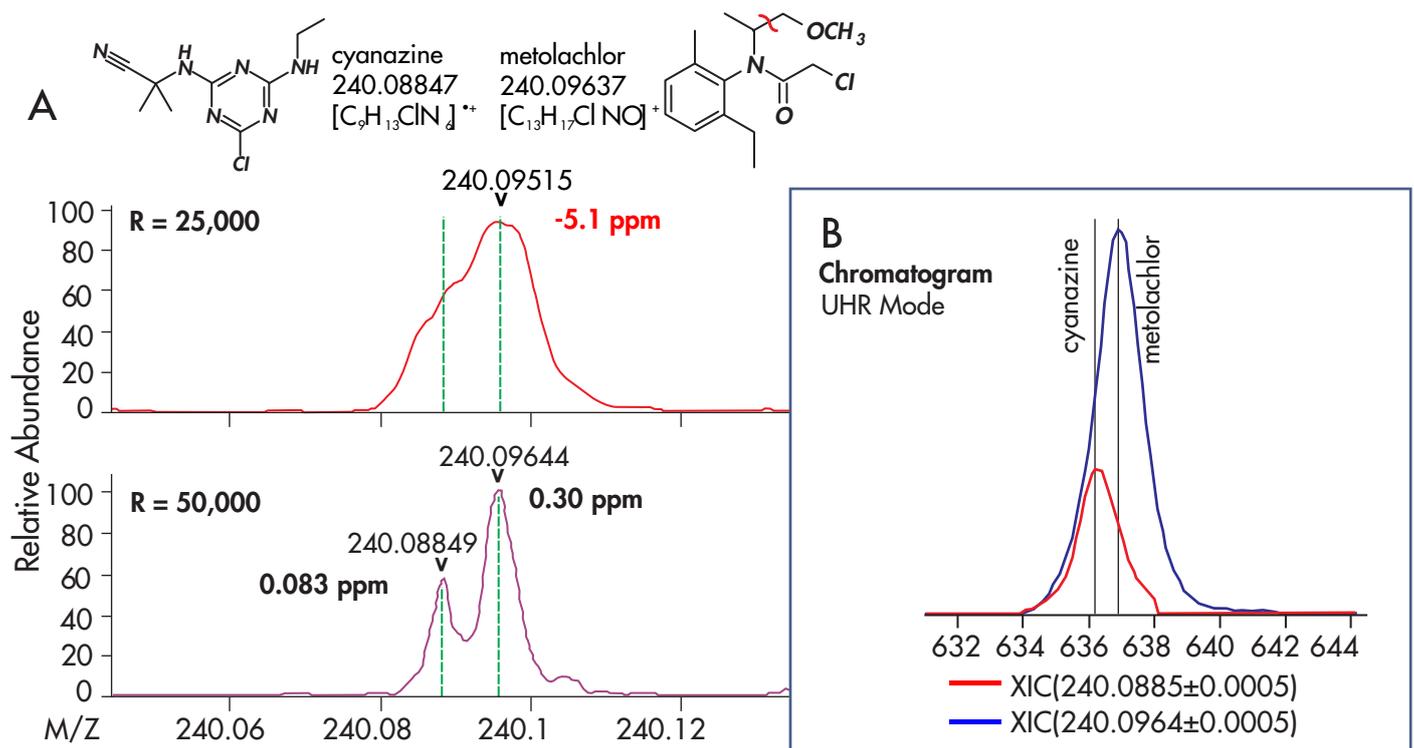
High Resolution Deconvolution[®] (HRD[®])



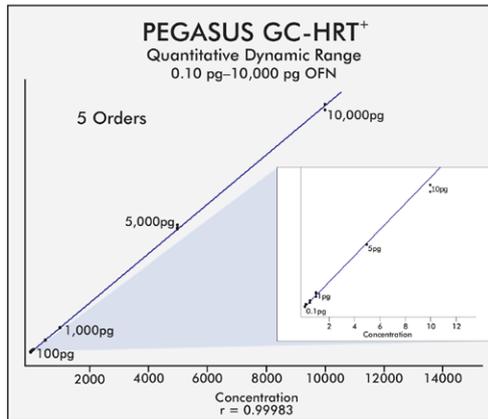
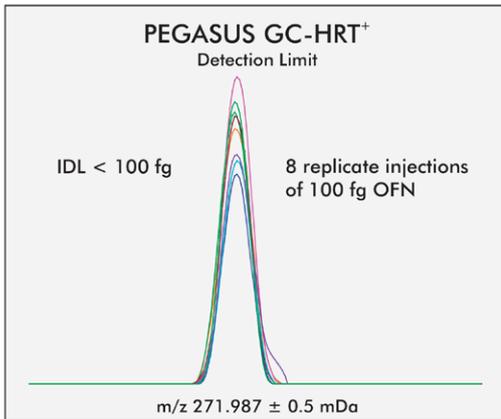
What Else Is in Your Sample?

HRD with 25,000 resolution deconvolutes and identifies important analytes in complex matrices.

In cases where ambiguity exists, Ultra High Resolution mode and HRD will pull apart highly isobaric ions. In the example below, the required mass resolution is greater than 40,000.

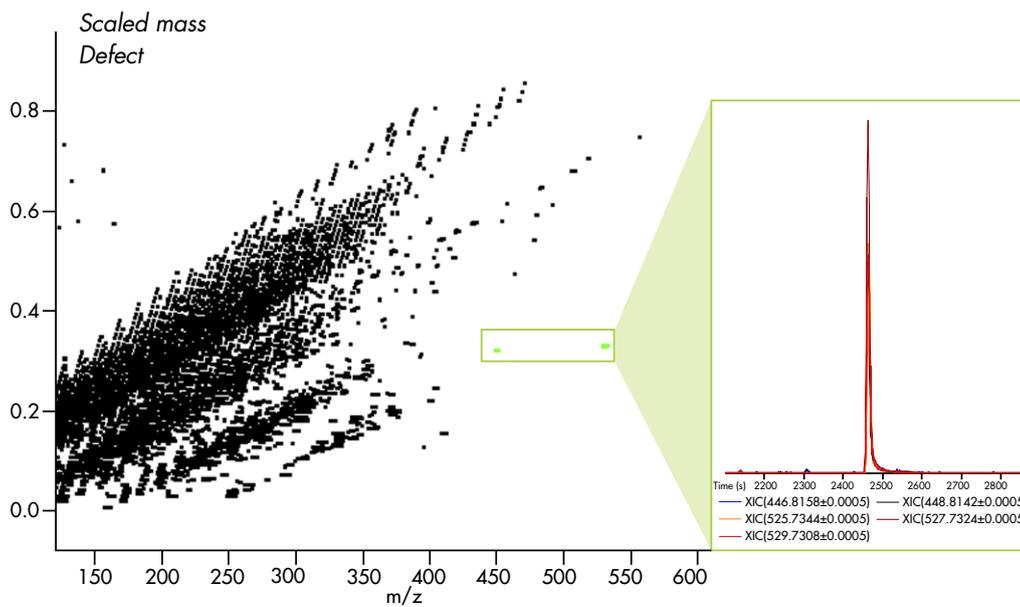


Enhanced Sensitivity

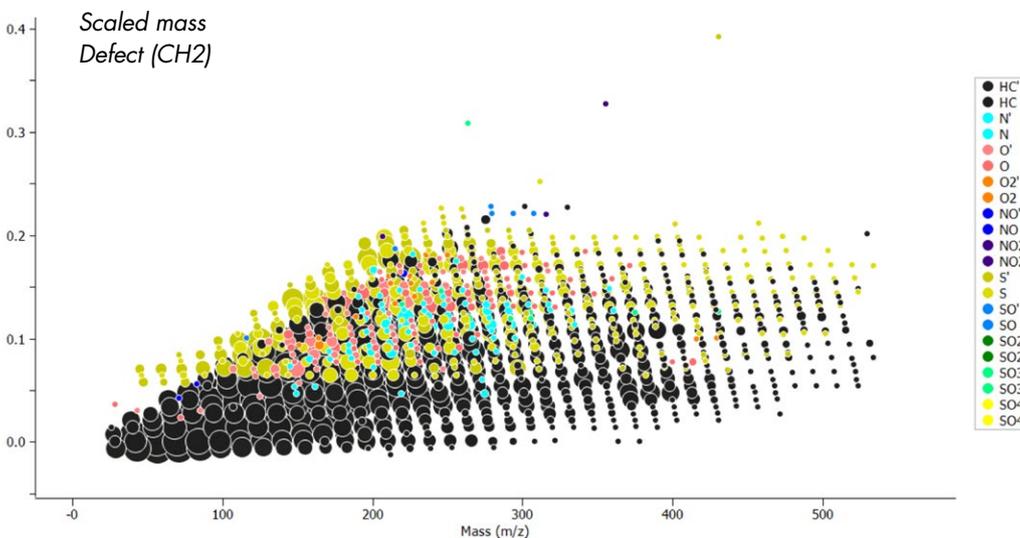


Find and quantify an unlimited number of analytes – in every run, every time. No need for additional targeted analyses.

Mass Defect Plot for Discovery of Unknown Compounds



Easily identify compounds with chemically scaled mass defect plots. From Kendrick to halogen, you can choose your mass defect scale.



New option!
Spectral analysis tools –
get the most out of your data!

Identify More with Confidence

Unknowns don't stand a chance when you have the leader in GC-MS in your corner. LECO products deliver the separation, accuracy, resolving power, deconvolution, and speed to characterise the most complex matrices.

Do you know what is in your sample? With our solutions, you'll have all the advantages you need to see the complete picture.

PEGASUS® GC-HRT+

Deconvolution | Sensitivity

Productivity | Reproducibility

Accurate Mass | Structural Interpretation

Life Sciences and Chemical Analysis Solutions

Every day around the world, LECO instruments continuously perform analyses for today's most complex applications. Whether you are analysing samples in the

food, flavor/fragrance, petroleum, environmental, forensics, or life science (metabolomics) industries, we have an instrument configuration to meet your needs.



PEGASUS® BT GC-TOFMS

- Full-mass range sensitivity and speed with unparalleled deconvolution capabilities allow you to see more in standard analyses
- Robust, extremely low maintenance ion source
- Powerful Windows®-based ChromaTOF® brand software simplifies component identification – providing a significant increase in efficiency and productivity
- Key features include automated peak finding, chromatogram locking, reverse-library search mode, and data-dependent user-defined QC method development



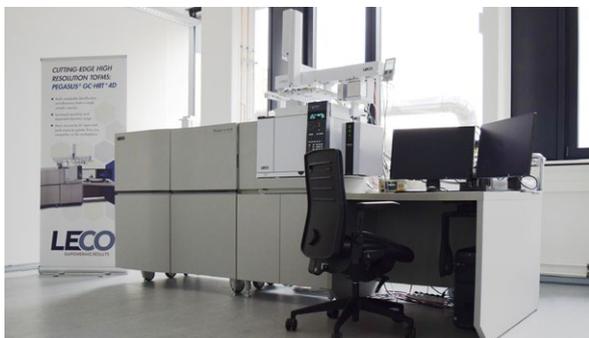
PEGASUS® BT 4D GCxGC-TOFMS

- Enhanced sensitivity by coupling our benchtop Pegasus BT with our high performance GCxGC thermal modulation system for analysing the most complex samples
- Cost-effective FLUX™ Flow modulation system is an excellent option for those looking for added capability over one dimensional GC
- Unique and powerful ChromaTOF brand software simplifies quantitation and analyte identification with features such as NonTarget Deconvolution® (NTD®), Target Analyte Find, library searches, and more
- StayClean® ion source eliminates the need for source cleaning



QuadJet™ SD

- Enhanced separating power for complex sample analysis
- Easy-to-use ChromaTOF-based software provides acquisition processing and reporting functionality within a single package
- Classification software feature simplifies component identification
- Available cryogen-free modulator eliminates the need for LN₂ dewars



A Commitment to Quality and Service

LECO instruments are noted for superior precision, speed, and ease-of-use. We are an international company with over 25 subsidiaries worldwide. Our global network of sales/support is dedicated to customer service and satisfaction, and our commitment to quality is further underscored with ISO-9001:2015 certification. We conform to CE quality and safety specifications, fully testing our instruments at our on-site Compliance Testing Centre.

ISO-9001:2015 • Q-994 | LECO, Pegasus, FLUX, ChromaTOF, Folded Flight Path, FFP, High Resolution Deconvolution, HRD, KADAS, Encoded Frequent Pushing, EFP, Multi-Mode Source, MMS, Identification Grading System, and IGS are registered trademarks of LECO Corporation. Microsoft, Windows are registered trademarks of Microsoft Corporation.

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