

# PEGASUS<sup>®</sup> GC-HRT<sup>+</sup>



**LECO**  
EMPOWERING RESULTS



## **LECO's PEGASUS GC-HRT<sup>+</sup>**

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.

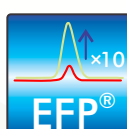
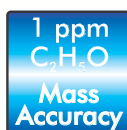
# Build Your Confidence Further

## 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
- Standard Electron Impact (HR-EI) and optional Chemical Ionization (HR-CI) sources are easily exchangeable
- Standard He and H<sub>2</sub> 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<sup>+</sup> Hardware

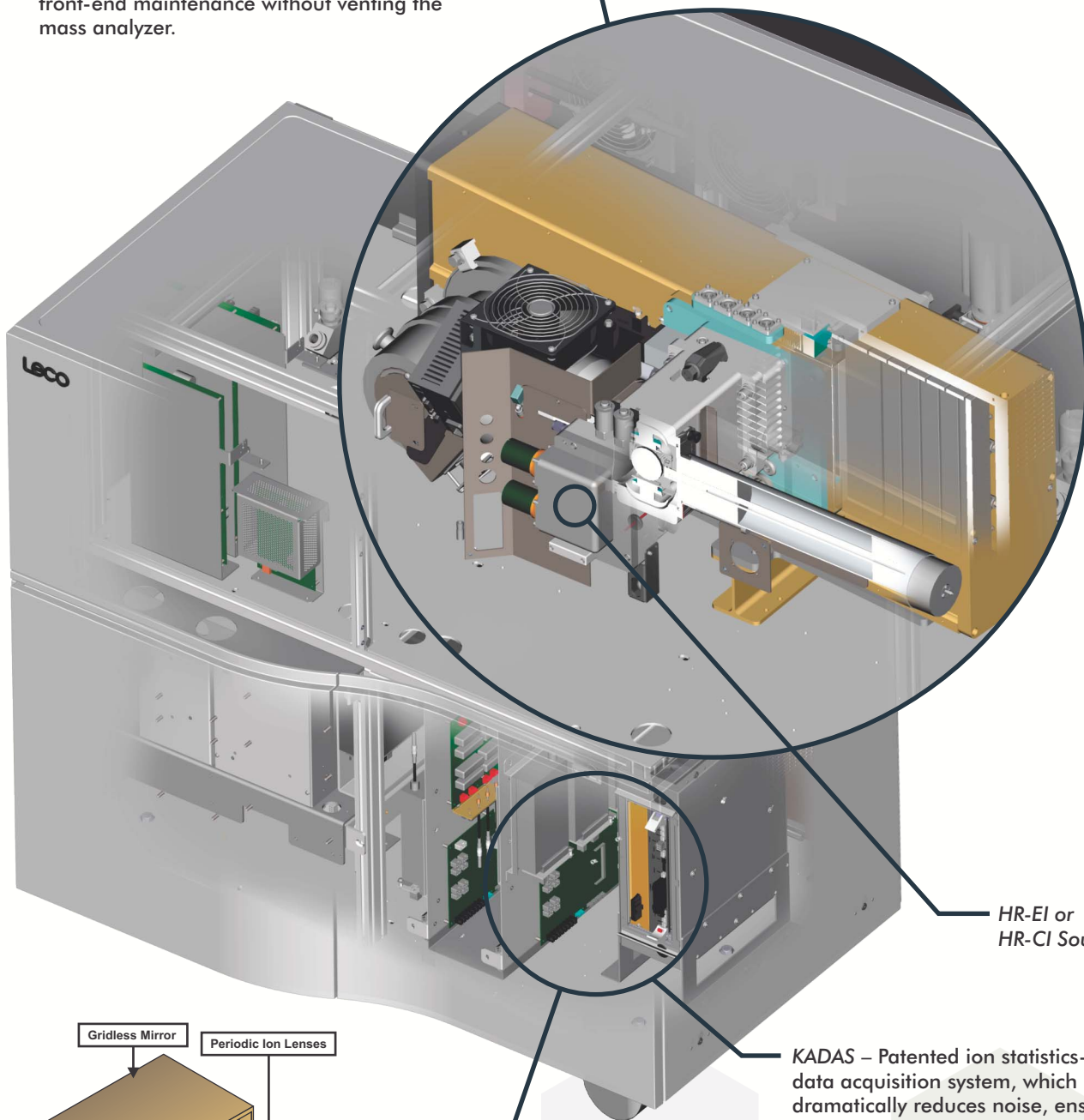
FFP provides high order TOF focusing which delivers high resolution sensitivity and accommodates for typical TOF ion beam dispersion.

Transfer ion optics to maximize transmission into the unique mass analyzer.

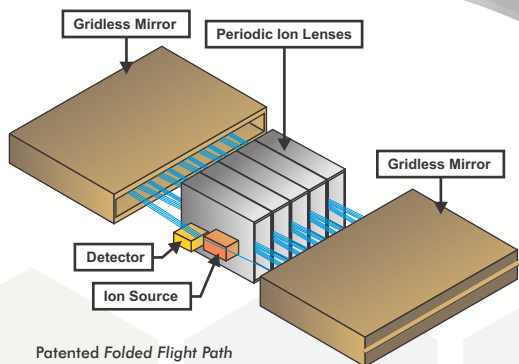
Pneumatic gate valve to quickly perform front-end maintenance without venting the mass analyzer.

Novel Gain Optimization algorithm maximizes sensitivity and dynamic range.

Dual Orthogonal Acceleration focuses more ions into the analyzer.



HR-EI or  
HR-CI Sources



Patented Folded Flight Path

New Encoded Frequent Pushing – Patented method of pulsing the Orthogonal Accelerator multiple times to increase duty cycle (x10)

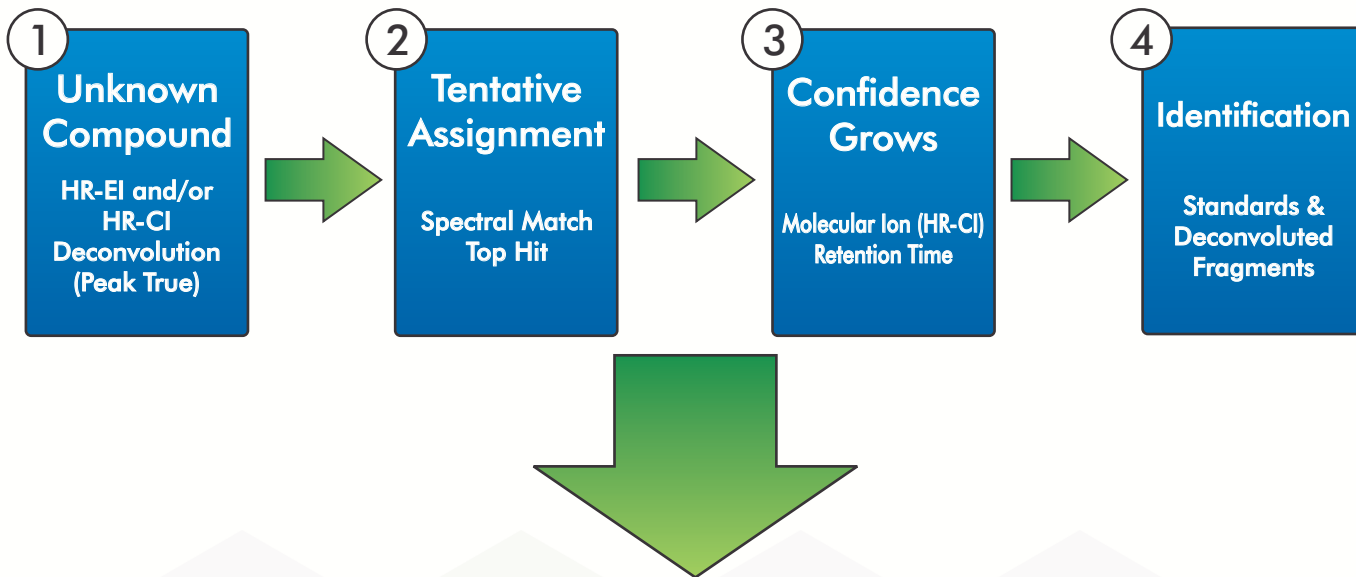
KADAS – Patented ion statistics-based data acquisition system, which dramatically reduces noise, ensures mass accuracy, and reduces file size.

Statistical models are used to characterize the probability of a single ion event and acquire only meaningful analytical data. KADAS is also designed to enhance spectral acquisition rates.



# PEGASUS GC-HRT<sup>+</sup> Software

Increase confidence in your identification challenges with intuitive ChromaTOF<sup>®</sup> brand software. In addition to standard instrument support, ChromaTOF's new and revamped Windows<sup>®</sup> ribbon-style menu system is designed for superior mass accuracy from high resolution mass spectrometry. Tools and workflows available in our software will increase confidence in your ability to identify components.



**Chromatogram** (1)

**Deconvolution Spectrum** (2)

**Spectral Match**

**Deconvolution Summary** (3)

**Accuracies of Fragment Ions** (4)

Peak #	Name	CAS	Peak S/N	Similarity	R.T. (s)	Formula	Mass Accuracy (ppm)	Area
21*	Dichlorvos	62-73-7	75	864	250.5	C <sub>4</sub> H <sub>7</sub> O <sub>2</sub> Cl <sub>2</sub> P	-0.68	418539
22	Peak 22	71648-27-6	77	705	254.75	C <sub>10</sub> H <sub>14</sub> O <sub>2</sub>	-439873.10	81241
23	Peak 23		78	705				15197
24	Peak 24		77	705				512969
25	Peak 25	544-76-3	46	762	272.25	C <sub>10</sub> H <sub>14</sub>	-561945.90	192495
26	Benzonitrile, 2,6-	1194-65-6	140		294.25	C <sub>8</sub> H <sub>6</sub> N <sub>2</sub>	-0.27	1424738
27	Peak 27	37764-25-3	39		295.5	C <sub>8</sub> H <sub>11</sub> O <sub>2</sub> N	-135406.79	75390
28	Eptic	759-94-4	103		296.25	C <sub>8</sub> H <sub>11</sub> NOS	0.08	654860
29	Bphenyl	92-52-4	187		310.75	C <sub>12</sub> H <sub>10</sub>	-0.22	2380148

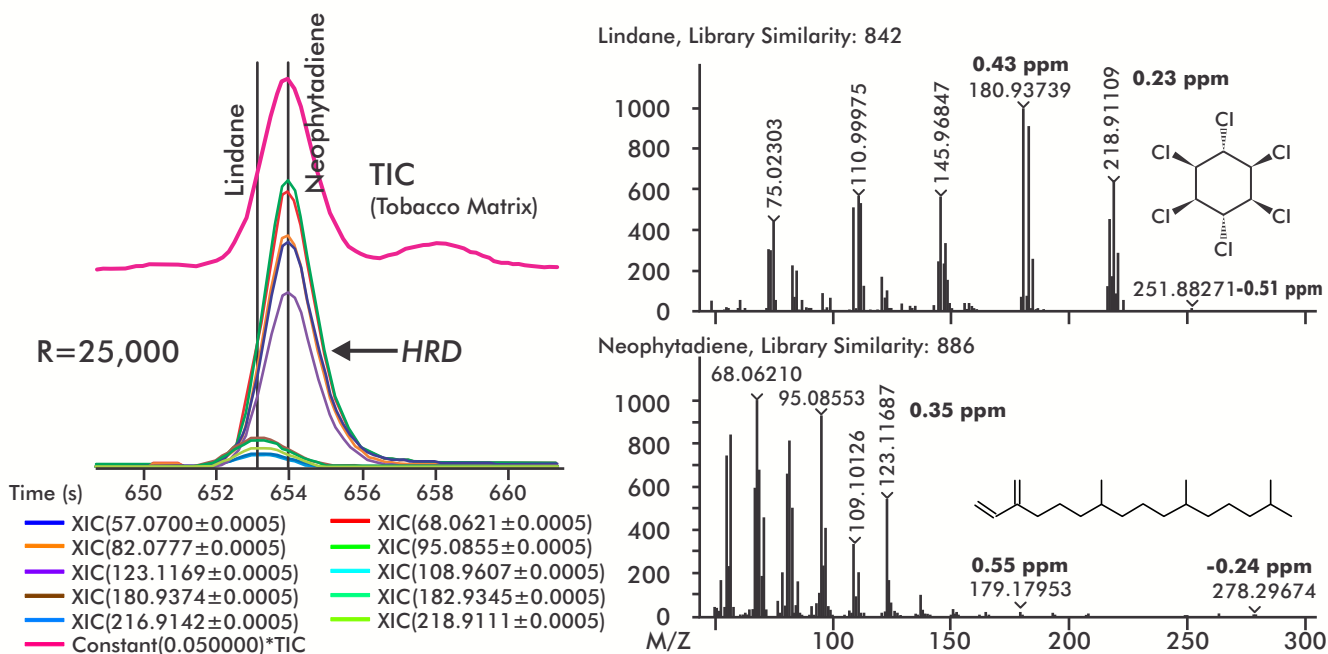
Mass	Formula	Mass Accuracy (ppm)	RDBE	Abundance	Area	Height	Resoluzion	S/N
109.00484	C <sub>2</sub> H <sub>5</sub> O <sub>2</sub> P	-0.59	0.5	1000	26556	5725	38843	74.84
184.97659	C <sub>8</sub> H <sub>7</sub> CO <sub>2</sub> P	-0.51	1.5	218	5799	1037	41550	34.91
109								
144.98157	C <sub>2</sub> H <sub>5</sub> OD <sub>2</sub> P	-0.13	2.0	63	1672	364	45274	16.53
57	57.06988			57	1508	407	35226	28.31
82.94504	CHCl <sub>2</sub>	0.0		44	1182	256	34090	15.08
49.97283				41	1097	347	38634	14.61
75.97101	C <sub>2</sub> H <sub>5</sub> CO	-0.45	2.0	35	942	223	35592	13.70

# High Resolution Deconvolution (HRD)

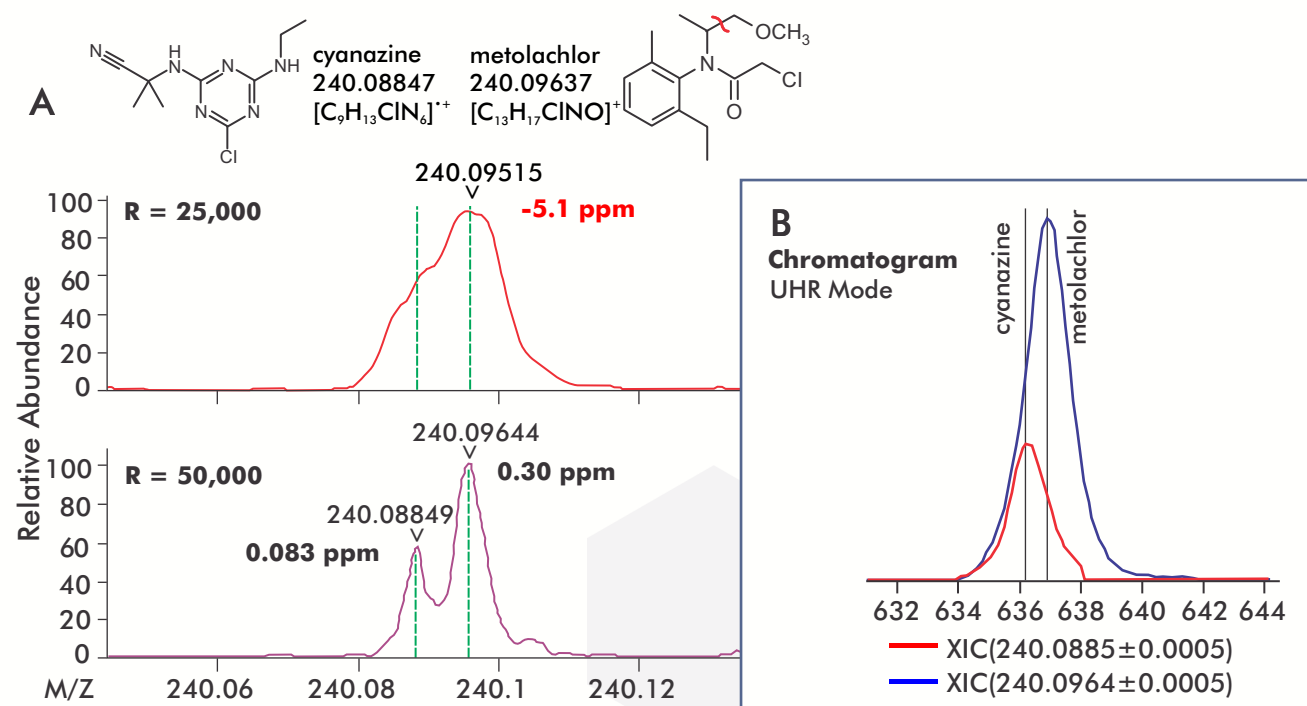


## What else is in your sample?

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

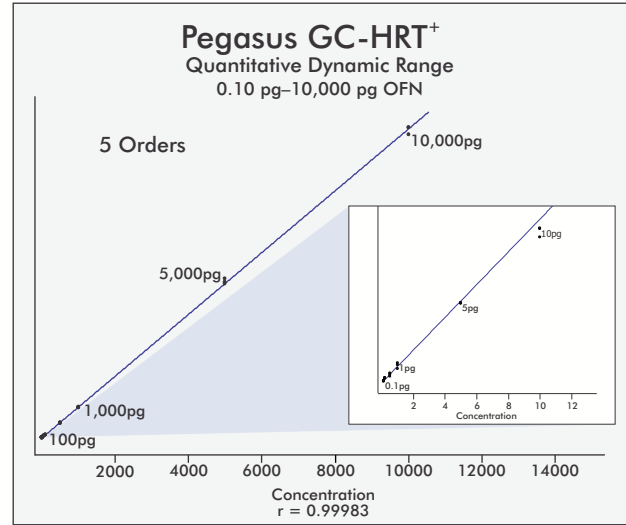
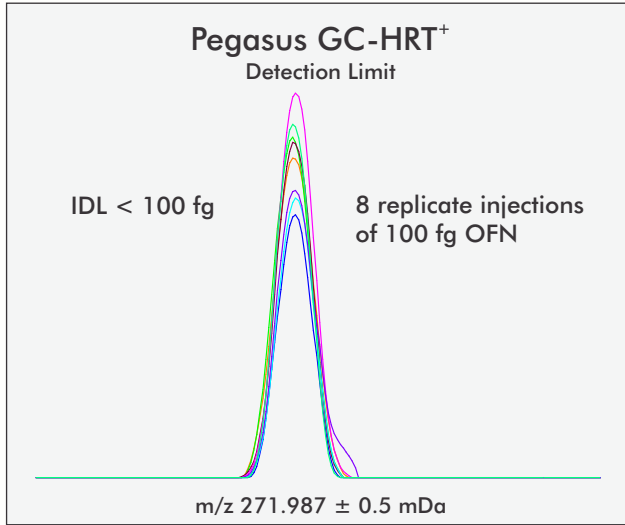


In cases where ambiguity exists, Ultra High Resolution mode and HRD will pull apart highly isobaric ions. In the example below, the required mass resolution is greater than 40,000.



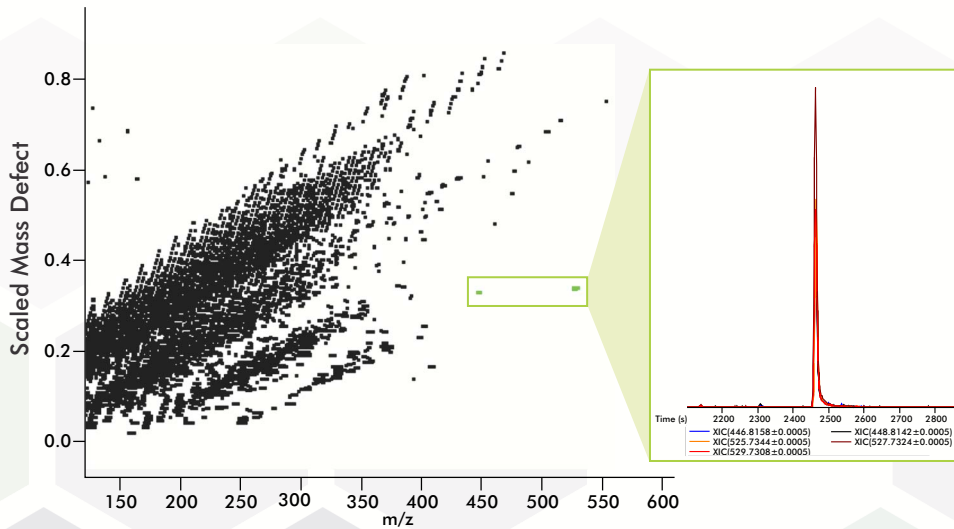
# Enhanced Sensitivity

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

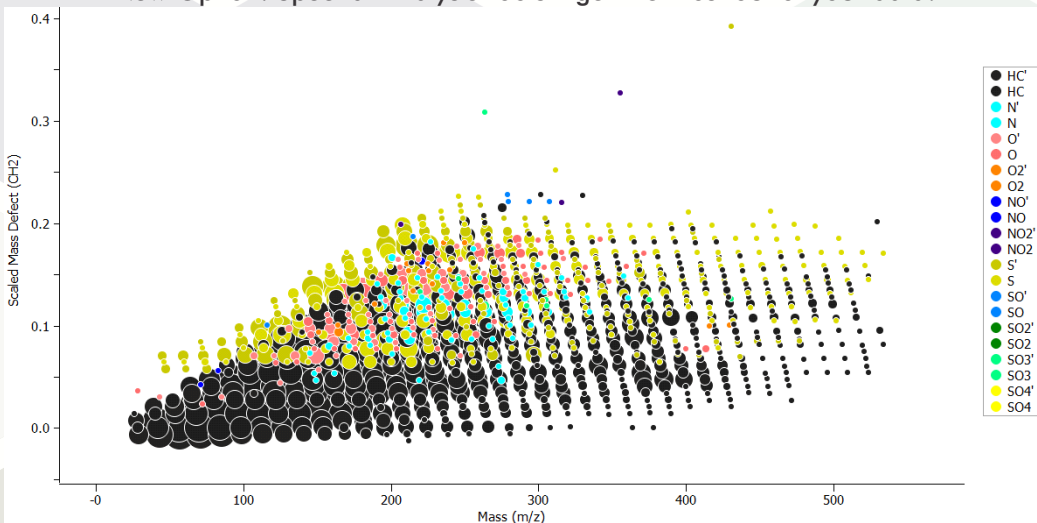


# Mass Defect Plot for Discovery of Unknown Compounds

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 characterize 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<sup>+</sup>

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



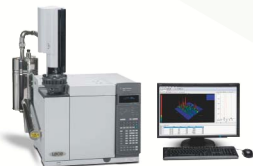
### PEGASUS BT GC-TOFMS

- 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 analyzing 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



### GCxGC

- Make your GCxGC analysis routine with single channel detectors
- Classification software feature simplifies component identification and results summary
- Supports Flame Ionization Detector
- Compatible with other single channel detectors



Technical Research Center



Robert J Warren Customer Experience Center



Global Support Center

## 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 Center.

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