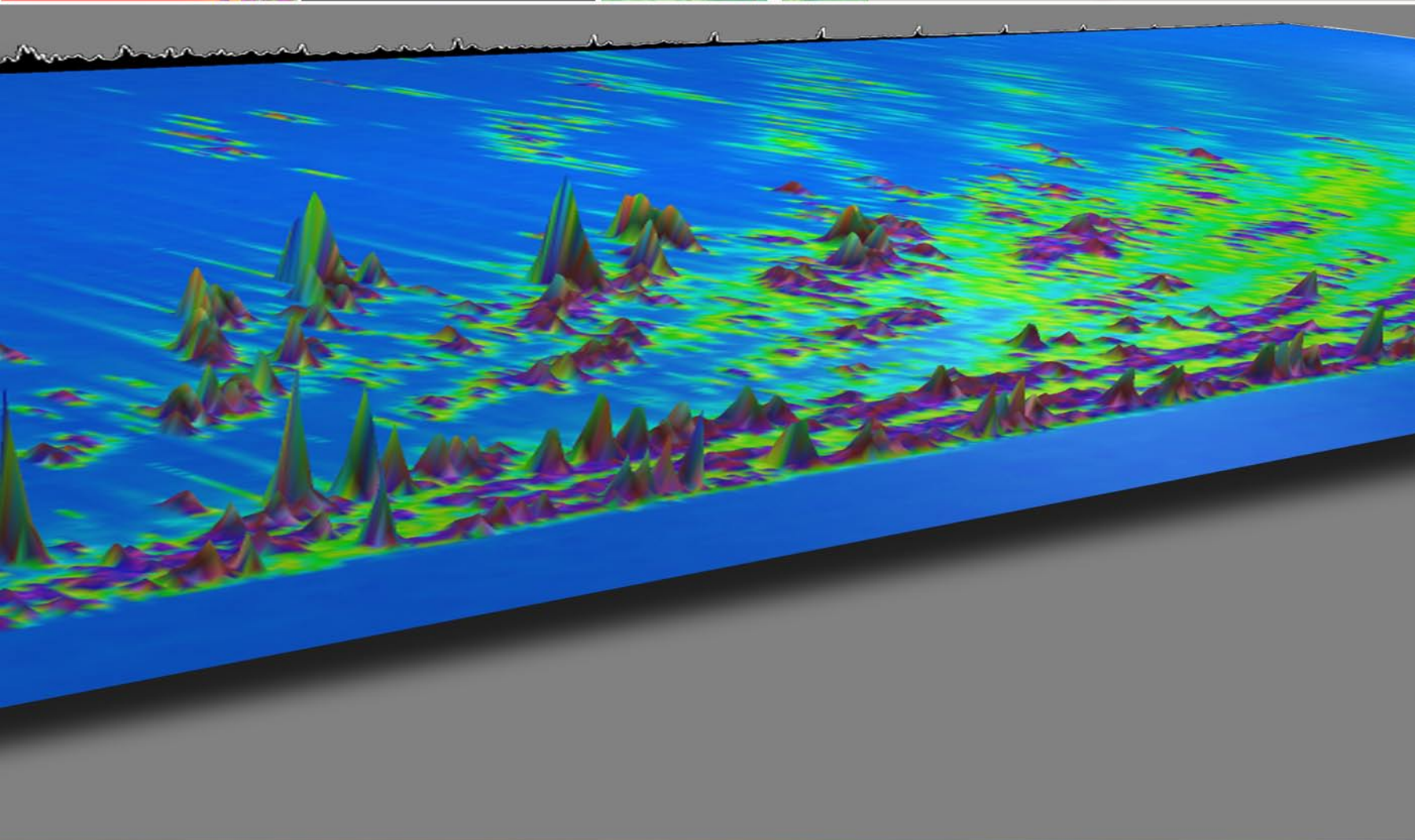


GC Image Software



ZOEX CORPORATION

Introduction: Zoex GC Image and GC Project Software

GLOBAL LEADING SOFTWARE Welcome to the world's leading software for comprehensive two-dimensional gas chromatography (GC x GC). Under development for over a decade, GC Image is the most trusted software for identifying compounds and groups that standard GC does not resolve.

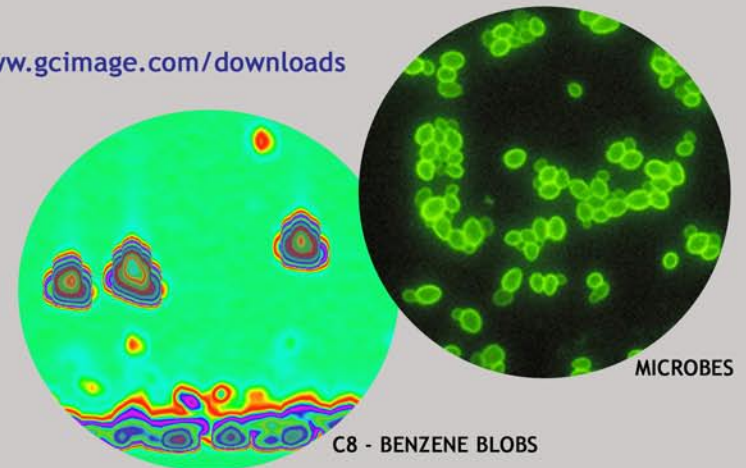
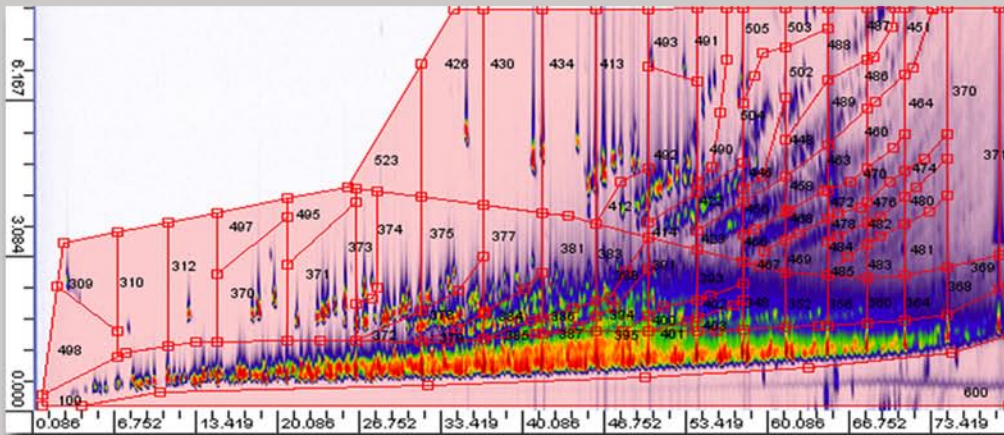
WHY DO I NEED GC IMAGE SOFTWARE? Comprehensive GC reveals chemical complexity obscured by one-dimensional GC. GC Image makes interpretation of GC x GC data routine.

INNOVATIVE 2-in-1 SOFTWARE GC Image provides a 2-in-1 solution for identifying and quantifying compounds and groups in GC x GC images: (1) **GC Image** for manually processing individual GC x GC chromatograms; (2) **GC Project** for automatically processing multiple GC x GC chromatograms from autosampler sequences.

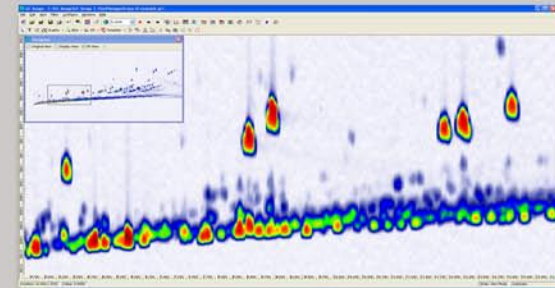
COMPATIBILITY GC Image works with most data files from most GC platforms.

FREE TRIAL GC Image Software is available for a **FREE** trial. Download software at www.gcimage.com/downloads

BASIC FUNCTIONS Colorize images, zoom, pan and navigate. Read, save and print peak and compound class tables. Examine raw pixel data. Display, format, manipulate, save and print 3-D images. Annotate with text, graphics and chemical structures. Flatten baseline and detect Blobs (Peaks). Intuitive graphical user interfaces for every functionality.



“BLOBS” GC x GC peaks resemble microbes in photomicrographs which computer imaging experts call “blobs”. The GC x GC community uses “Blobs” and “Peaks” interchangeably.



ADVANCED FUNCTIONS Detect compound classes with mass spectral criteria. NIST and Wiley MS library searches. Determine elemental compositions from HRMS data. Automatic quantitative analysis of complex mixtures. Extensive image comparison facilities.

“ We currently use GC Image for the processing of GC x GC data coming from various instruments. We especially appreciate the reactivity of GC Image developers and the continuous improvements they bring to the software to make it compliant with the specificity of the Flavour and Fragrance field.”
 -- Dr. Frédéric Begnaud, Firmenich SA, Analytical Innovations - Corporate R&D Division



PEPPERMINT

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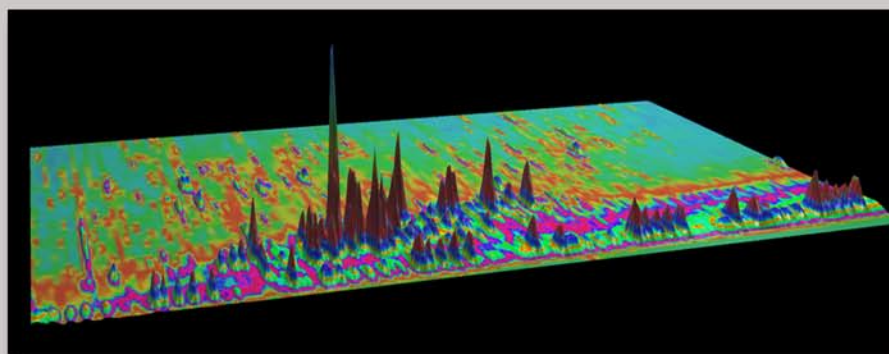
UNIQUE CAPABILITIES AND BENEFITS

TEMPLATES FOR TARGET ANALYTE IDENTIFICATION routinely identify, quantify, annotate and report multiple compounds and compound classes using “Smart-Templates”™ (page 5)

1-STEP COMPOUND CLASS IDENTIFICATION Identify compound classes using “CLIC” (Computer Language for Identifying Chemicals) (page 6)

IMAGE TILING FOR FAST DATA ANALYSIS Rapidly partition a GC Image into simple integration windows. (page 7)

FULLY AUTOMATED QUANTITATION & REPORTING Generate quantitation reports automatically with built-in GC Project software. (page 8)



PEPPERMINT OIL

IMAGE COMPARISON Image comparison tools cause minute differences between images to “pop out” visually. (page 9)

ELEMENTAL COMPOSITION DETERMINATION Determine elemental compositions derived from HRMS detection. (page 10)

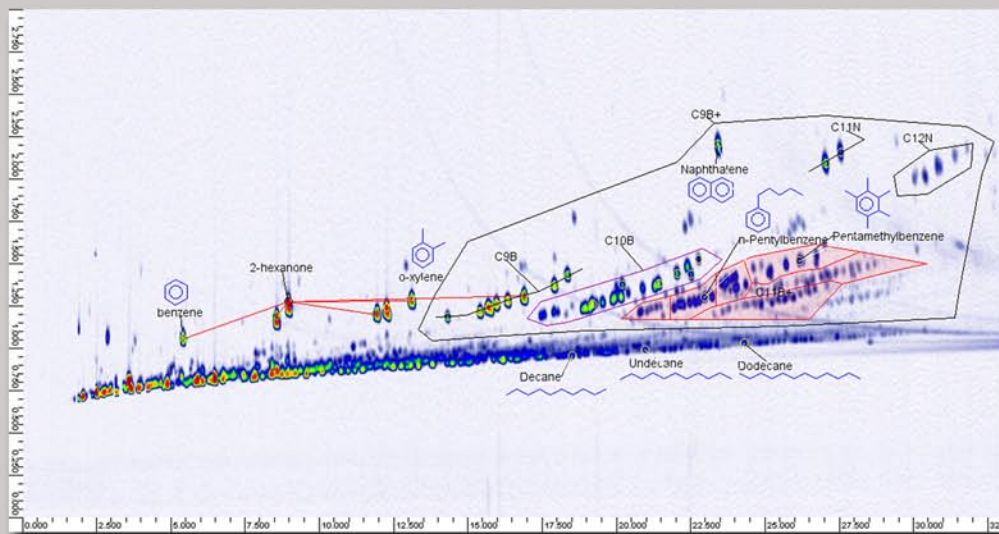
SUPPORT Zoex provides the best software support in the industry.

SMART-TEMPLATES™ FOR TARGET ANALYTE AND GROUP IDENTIFICATION

Smart-Templates™ are sophisticated “integration windows” that tell the computer how to label peaks and groups, append notations and chemical structures and extract quantitative information.

A variety of “Smart-Template Objects” support:

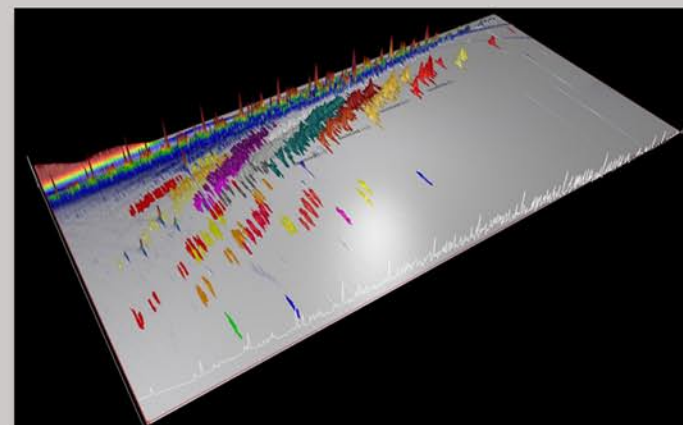
- Detecting blobs
- Detecting groups
- MS screening of blobs or groups
- Whole-image segmentation and analysis
- Spatial transformation (warps) of templates
- Simple integration areas (similar to 1DGC integration)
- Internal or external standard quantitation



BTEX TEMPLATE

COMPOUND CLASS IDENTIFICATION

“CLIC Expressions” rapidly identify compound classes in a complex mixture. For example, classifying aromatics in diesel fuel takes less than a second, once the appropriate CLIC expressions have been recorded into a template.



CLIC GROUPS

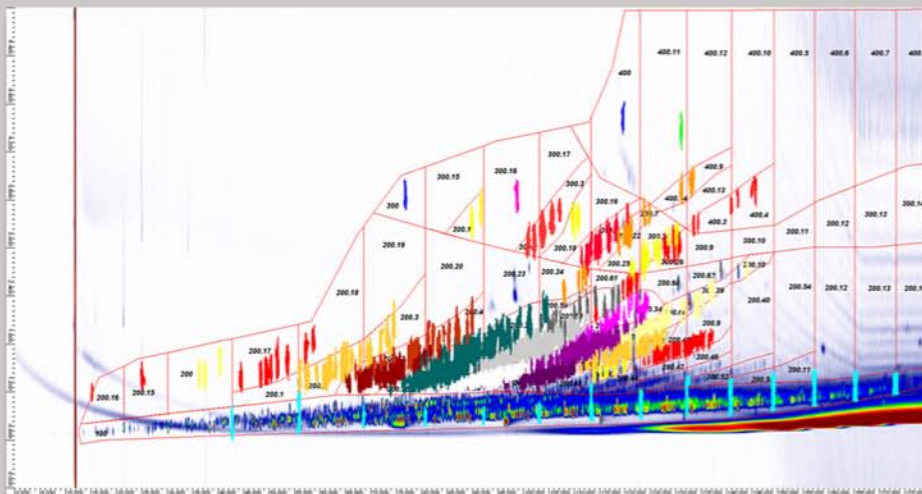
ID	Name	Type	# of Blobs	# of Included Blobs	Included Volume	Total Volume	Included Percent ...	Percent Response	Group Color
C12	Naphthalenes	Group	8	8	2,598,635.00	2,598,635.00	0.03	0.03	Red
C11	Naphthalenes (Ord 142=1 & Ord 141=2)	Group	2	2	1,185,562.00	1,185,562.00	0.01	0.01	Yellow
C13	Biphenyls	Group	2	2	1,452,738.00	1,452,738.00	0.02	0.02	Green
C9	Benzenes	Group	9	9	24,026,349.00	24,026,349.00	0.27	0.27	Blue
C10	Benzenes	Group	23	23	36,499,011.00	36,499,011.00	0.42	0.42	Orange
C13H16	Benzenes	Group	12	12	2,076,484.00	2,076,484.00	0.02	0.02	Grey
C9H8	Benzenes	Group	58	26,127,436.00	26,127,436.00	0.30	0.30	Black	
C14H22	Benzenes (MW 190)	Group	32	13,347,182.00	13,347,182.00	0.15	0.15	Purple	
C13H20	Benzenes (MW 176)	Group	36	16,770,918.00	16,770,918.00	0.19	0.19	Light Blue	
C14H20	Benzenes (MW 188)	Group	53	16,096,300.00	16,096,300.00	0.18	0.18	Light Green	
C14H18	Benzenes (MW 186)	Group	23	2,280,277.00	2,280,277.00	0.03	0.03	Light Blue	
C14H16	Naphthalenes	Group	11	1,294,810.00	1,294,810.00	0.01	0.01	Light Green	
C15H16	Biphenyls (MW 196)	Group	17	1,793,732.00	1,793,732.00	0.02	0.02	Light Blue	
C14H4	Biphenyls (MW 182)	Group	14	2,709,806.00	2,709,806.00	0.03	0.03	Light Blue	
C13H4	Trimethylnaphthalenes (MW 170)	Group	12	2,484,047.00	2,484,047.00	0.03	0.03	Light Blue	
C9H10	Benzenes (MW 106)	Group	3	7,495,479.00	7,495,479.00	0.09	0.09	Light Blue	
C15H24	Benzenes (MW 204)	Group	7	3,723,464.00	3,723,464.00	0.04	0.04	Light Blue	
C15H22	Benzenes (MW 202)	Group	36	8,218,090.00	8,218,090.00	0.09	0.09	Light Blue	
C15H20	Benzenes (MW 200)	Group	2	308,826.00	308,826.00	3.53E-3	3.53E-3	Light Blue	
C16H24	Benzenes (MW 216)	Group	28	4,793,838.00	4,793,838.00	0.05	0.05	Light Blue	
C15H20	Benzenes	Group	33	4,158,481.00	4,158,481.00	0.05	0.05	Light Blue	
C13H4	Benzenes	Group	21	23,507,872.00	23,507,872.00	0.27	0.27	Light Blue	
C13H6	Benzenes (MW 146)	Group	24	24,959,450.00	24,959,450.00	0.29	0.29	Light Blue	
C12	Benzenes	Group	75	82,976,502.00	82,976,502.00	0.61	0.61	Light Blue	

BLOB SET TABLE

“Excellent work! You solved the problem and made my day. By simply checking my desktop structure you found a shortcut which didn’t belong. Once it was removed the latest version of GC Image was easily installed and is now working. This is highly appreciated!”
 -- Patric Eckerle, Dow Chemical, Germany

IMAGE TILING FOR FAST DATA QUANTITATION

Images can be partitioned into adjacent, non-overlapping, simple integration windows. Newly developed GC Image tiling tools make it fast and efficient to create complicated tilings like the one below. Once tiled, quantitation takes less than one second and can be fully automated.



GC PROJECT

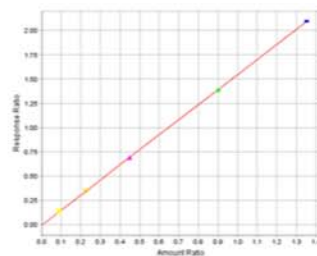
GC Project, a companion application bundled with GC Image, automates analysis and reporting. For supported GC models, set up sequence tables from within GC Project and download them to the GC.

Comprehensive ASTM D5580 Report

Calibration Table

Parameter Table

Parameter	Value	Units
Calibration Batch Name	CalBatch	-
Calibration Batch Author	GC User	-
Calibration Batch Date	30 November 2007	-
Calibration Batch Type	All Calibration Runs	-



Response Ratio Vs. Amount Ratio for toluene with respect to 2-benzene

Summary Report

Review_SMP01_Run01_Img01.gci

Created By	ahg
Time Stamp	Fri 4, 2009 4:27:43 PM
Source	C:\GC Image\GC Image 1\data\projects\NewProject\Images\020901_Run01_Img01.gci

SMP01_Run01_Img01.gci

Image Attributes

LINES Number	
Operator Name	
Integrated By	GC User
Import Date	30 November 2007 17:43
Source File	C:\GC Image\projects\NewProject\Images\020901_Run01_Img01.gci
Sampling Rate (Hz)	200.0
Scan Time (Min)	0.0
Acquisition Period (Sec)	3.0
Raw File (Min)	33.0
Original Dimensions (pixels)	800 x 600
Display Dimensions (pixels)	800 x 600

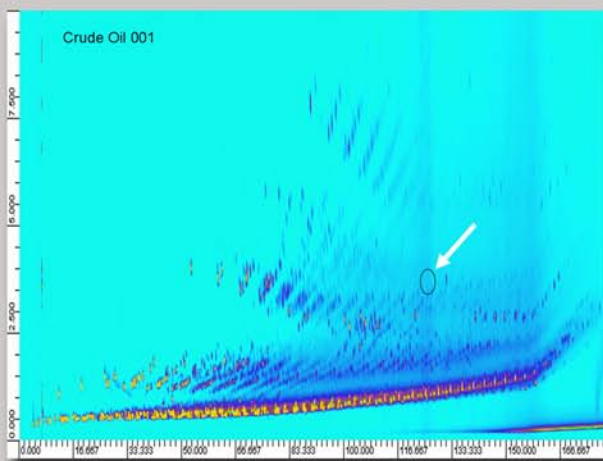
Bin Table

BinID	Compound Name	Group Name	Substance	Internal Standard	Peak 1 (min)	Peak 1 (sec)	Peak Value	Area	Amount	Amount Source
1	toluene	CS	tol	0	4.50	1.13	1,974.91	106,424.78	0.41	Calibration - 2-benzene
6	2-benzene	CS	tol	6	8.90	1.28	4,198.32	113,993.88	0.72	Amount Table
14	ethylbenzene	CS	tol	6	11.90	1.20	2,622.22	33,298.71	0.13	Calibration - 2-benzene
18	n-octane	CS	tol	6	13.05	1.28	2,128.13	28,968.19	0.12	Calibration - 2-benzene
19	1,2-dimethylbenzene	CS	tol	6	14.43	1.30	1,948.20	22,441.98	0.12	Calibration - 2-benzene
21	toluene	B	tol	6	1.03	1.08	1,748.56	18,841.80	0.07	Calibration - 2-benzene

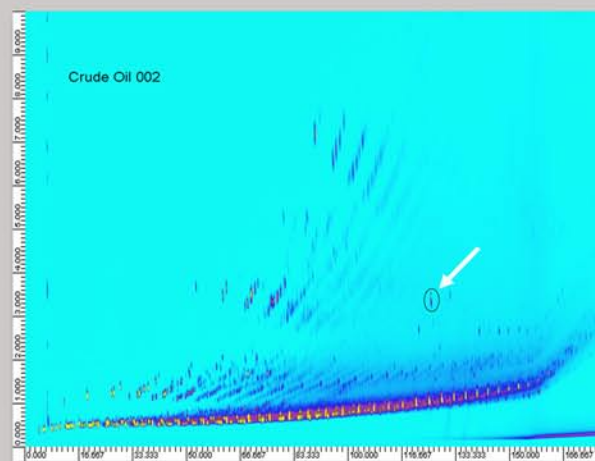
IMAGE COMPARISON

IMAGE ALGEBRA Add, subtract, multiply images and colorize the results.

BLINK TEST The Blink Test displays a pair of registered images alternately every half second. Compounds or groups present in one image, but not the other, will “blink”. Long used by astronomers to detect planets and comets, the “blink” test allows you to discover small differences amongst thousands of resolved peaks.



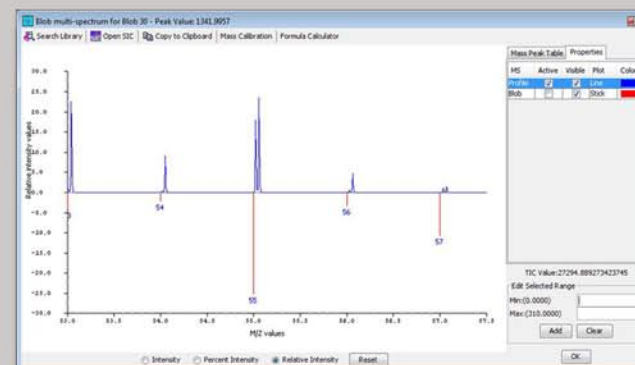
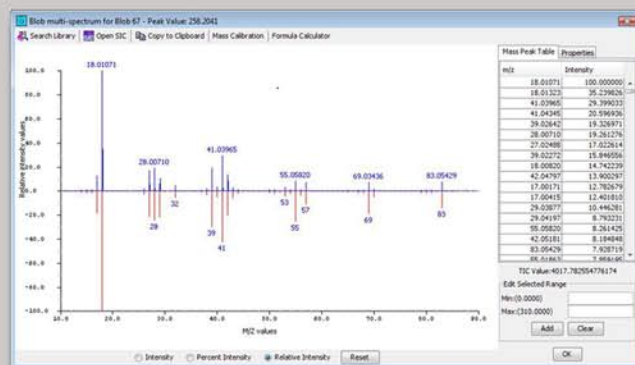
WILLISTON BASIN OILS #1



WILLISTON BASIN OILS #2

HIGH RESOLUTION MS DATA

High resolution MS data permits elemental composition determinations on the basis of exact mass measurements. Elemental composition lists can be pruned by a variety of methods, but GC x GC retention data, which provides compound class information is usually definitive.



"I enjoyed the training very much. It was useful. The most important was the discussion of the test questions."
 -- Erika Knapp, MOL Group, Hungary

TRAINING AND SUPPORT

GC Image is intuitive, but specialized professional software. We recommend classroom training. Analysts around the world attend Zoex software training courses and return home with the confidence to develop their methods.

LEARN TO:

- Colorize images, display 3-D perspectives
- Flatten baseline, detect peaks
- Identify compounds and groups
- Build templates
- Determine elemental compositions of targets
- Compare images
- Automate analysis

CLASSES

Zoex offers on-site and on-line training. Our on-site classes (held at our headquarters in Houston, Texas and at our Zoex Europe office based in Eindhoven, The Netherlands) receive high praise from comprehensive GC analysts across the globe.

TELEPHONE SUPPORT

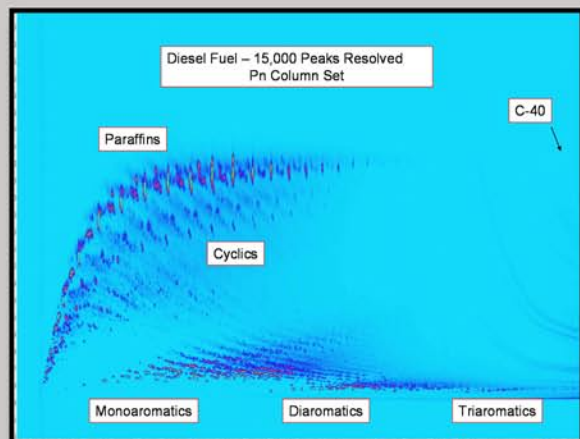
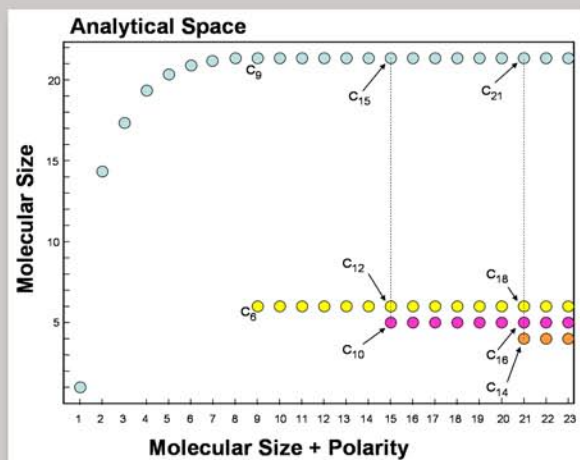
Zoex Corporation answers telephone calls in person during regular business hours. Any of our sales and service centers will be able to connect you to the right person.

EMAIL SUPPORT

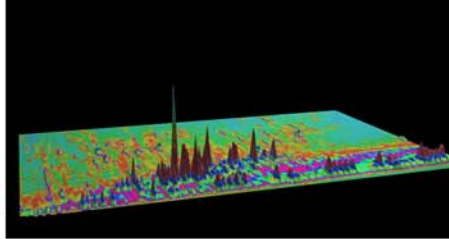
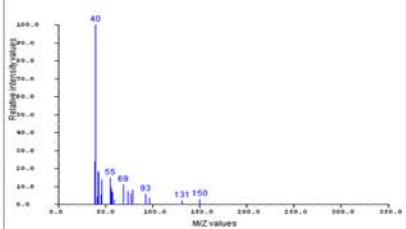
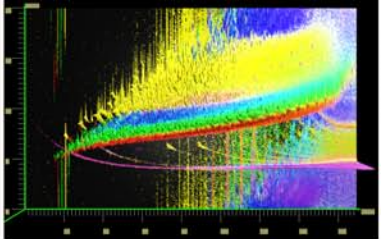
You may contact any member of our staff by email. We handle 95% of our service request calls with single emails within four hours.

ONLINE MEETINGS

We invite online meetings with our technical staff at any time. Contact us to learn how easy and efficient it is to use our online training service and support facilities.



Visit www.zoex.com or www.zoex.eu for information on curriculum, pricing and class schedules.



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