

The zNose™ : Commercial Application of a Quantitative Electronic Nose with Olfactory Images and Virtual Sensor Arrays

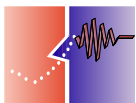


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Content

- Introduction - zNose™ Vs eNose
- Fast Chromatography and Virtual Sensor Arrays
- VaporPrints™ - True Olfactory Images
- Food & Beverage Applications

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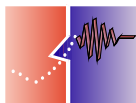
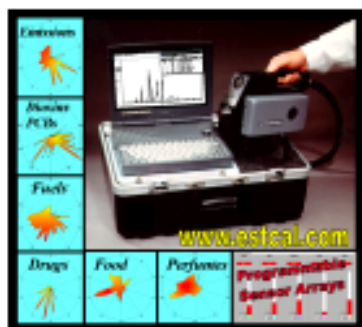
zNose™ Description

- The zNose™ - A GC/SAW Electronic Nose with internal preconcentrator and helium gas supply
- 10 Second Analysis Speed
- Volatile Compounds - ppb MDL
- Semi-Volatile Compounds - ppt MDL

2 Popular Models Available

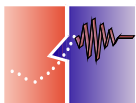
Handheld

Benchtop



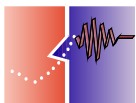
zNoseTM Vs eNose

	zNose	eNose
Speciation	YES	NO
EPA Methods	YES	NO
Sensitivity	ppt	ppm
Speed	Seconds	Minutes
Intelligence	Human	Artificial
Precision	HIGH	LOW
Accuacy	HIGH	LOW
Stability	Months	Hours
Cal Standards	YES	NO
Sensors	hundreds	4-32
Olfactory Images	YES	NO



The Only Electronic Nose to be Validated by US EPA

- **US EPA Environmental Technology Validation**
 - Well Water Monitoring for volatile organic pollution
 - Soil testing for PCBs in the field
 - Soil testing for Explosives in the field
- **White House ONDCP - Law Enforcement**
 - Explosives
 - Drugs & Contraband
 - Money

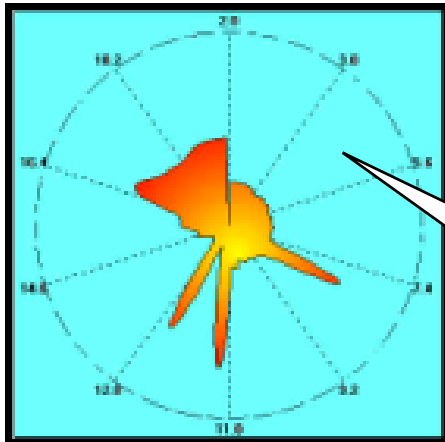
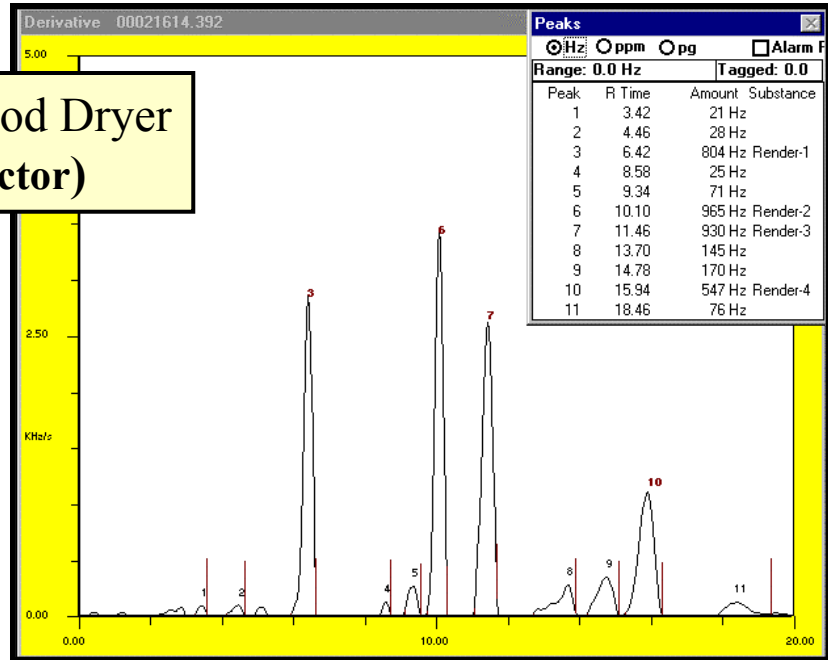




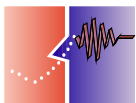
Odor Management (Rendering Plants)



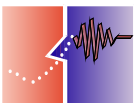
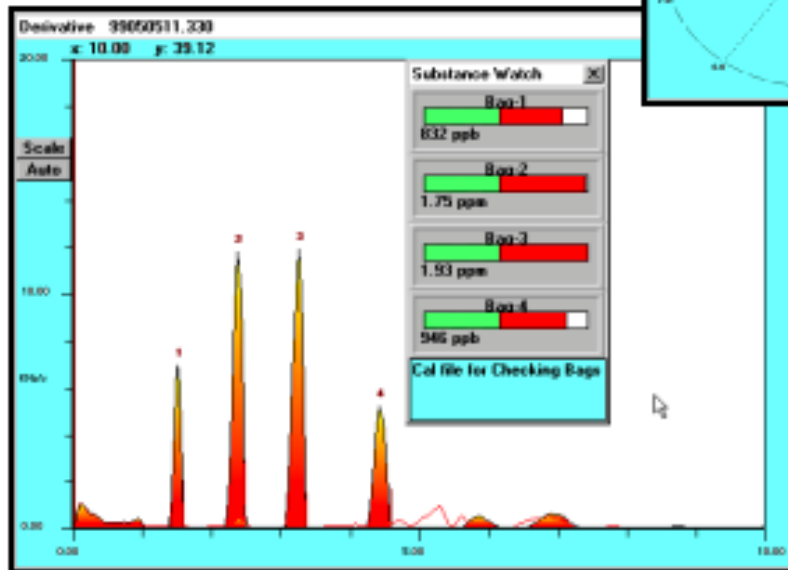
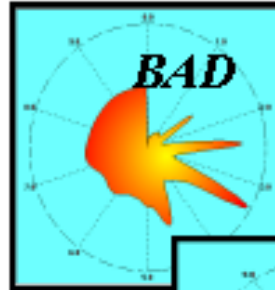
Smell from Blood Dryer
(20°C Detector)



Creates Olfactory
Images Specific to
Factory Odors

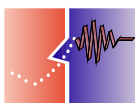
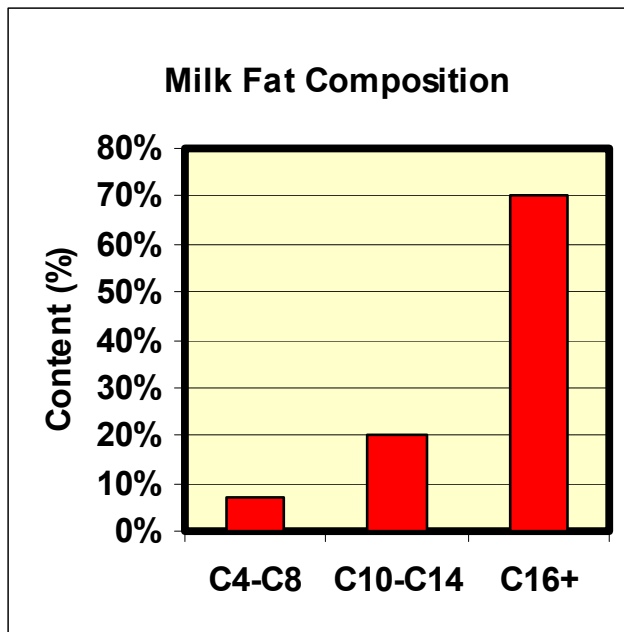


Quality Control of Plastics



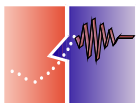
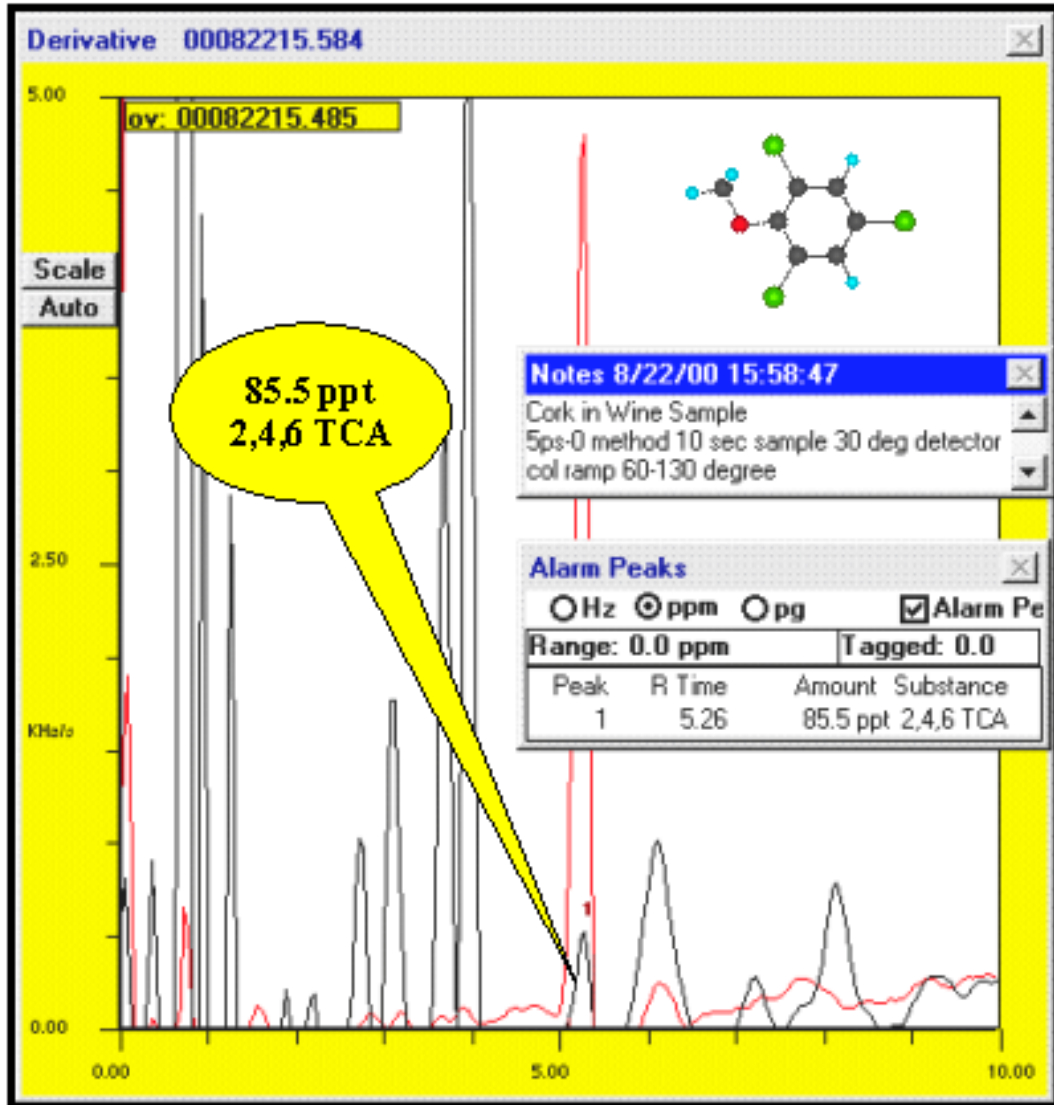
Fatty Acids in Milks

- **Fats, Proteins, and sugars**
- **400 different fatty acids and fatty acid derivatives are found in milk**
- **Wide range of vapor pressures: butyric acid (C4) to triglyceride (C26)**





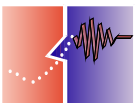
TCA in Wine and Corks (part per trillion)



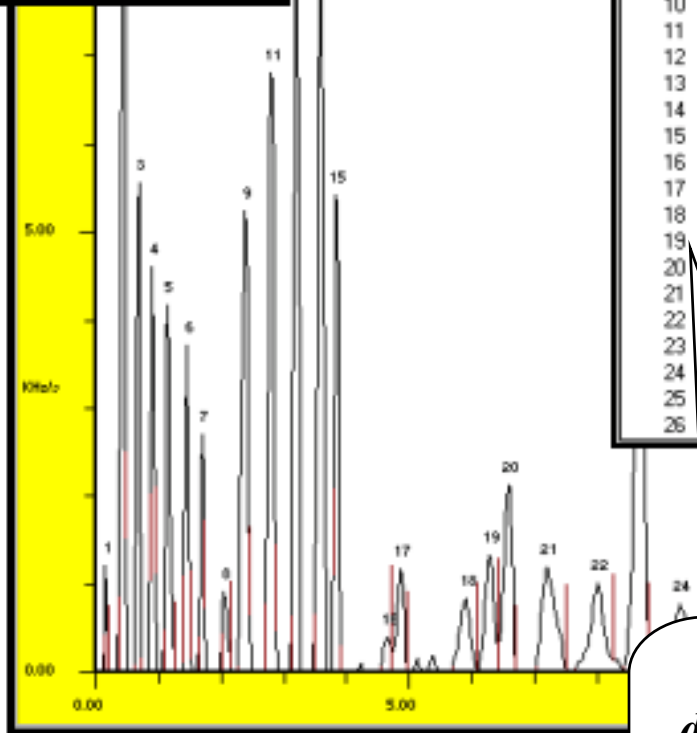
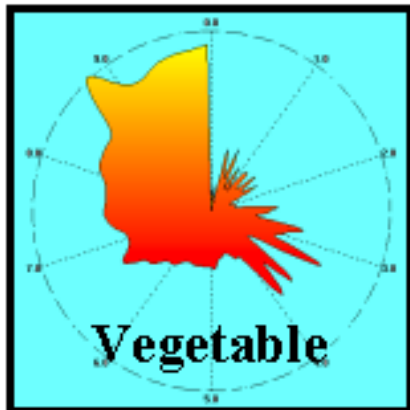
zNose™ Analysis of Campbell's Soup



Clam Chowder
Chicken Noodle
Minestrone
Consommé Beef
Split Pea
Bean Bacon
Cream of Asparagus
Vegetable
tomato
Potato
Cream of Mushroom
Cream of Chicken

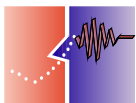


Vegetable Soup

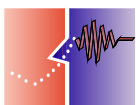
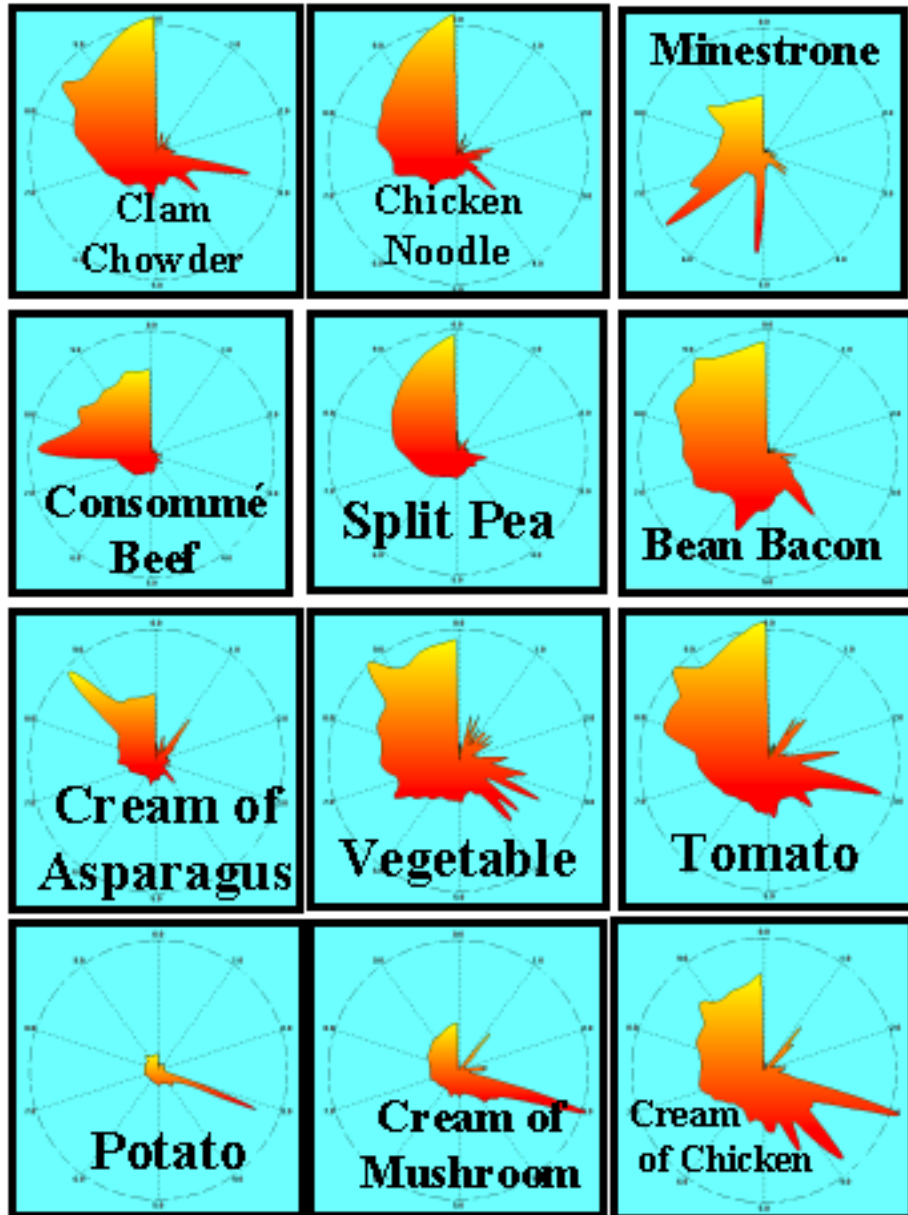


Peaks			
● Hz ○ ppm ○ pg			
Range: 0.0 Hz			
Peak	R Time	Amount	Sub
1	0.12	45 Hz	
2	0.40	857 Hz	
3	0.66	320 Hz	
4	0.88	303 Hz	
5	1.12	361 Hz	
6	1.44	271 Hz	
7	1.68	190 Hz	
8	2.02	87 Hz	
9	2.36	630 Hz	
10	2.54	43 Hz	
11	2.78	705 Hz	
12	2.98	35 Hz	
13	3.18	718 Hz	
14	3.58	881 Hz	
15	3.82	444 Hz	
16	4.64	32 Hz	
17	4.86	125 Hz	
18	5.90	161 Hz	
19	6.28	173 Hz	
20	6.58	286 Hz	
21	7.20	307 Hz	
22	8.02	214 Hz	
23	8.70	883 Hz	
24	9.34	162 Hz	
25	9.94	65 Hz	
26	10.02	661 Hz	

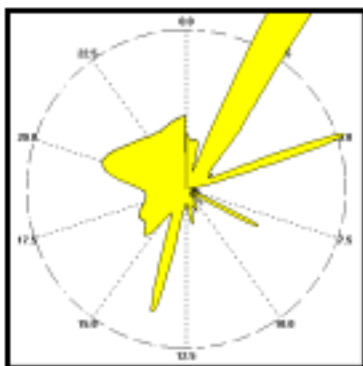
*Now you can
define the smell of
vegetable soup
using 26 specific
chemical sensors!*



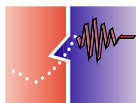
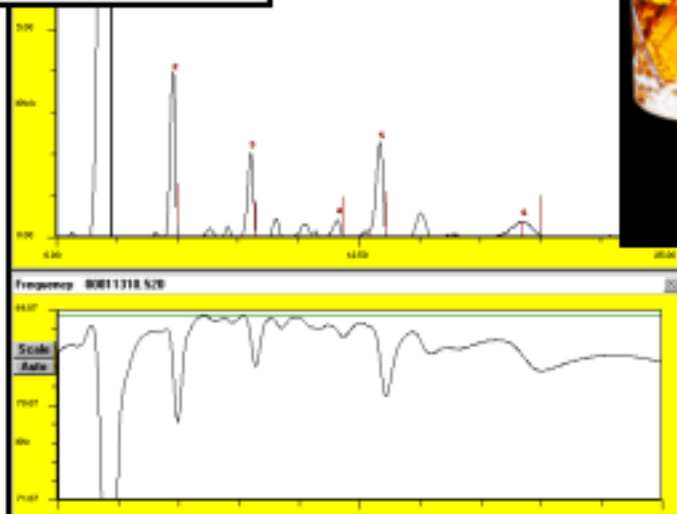
Campbell's Soup VaporPrints™



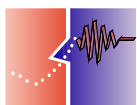
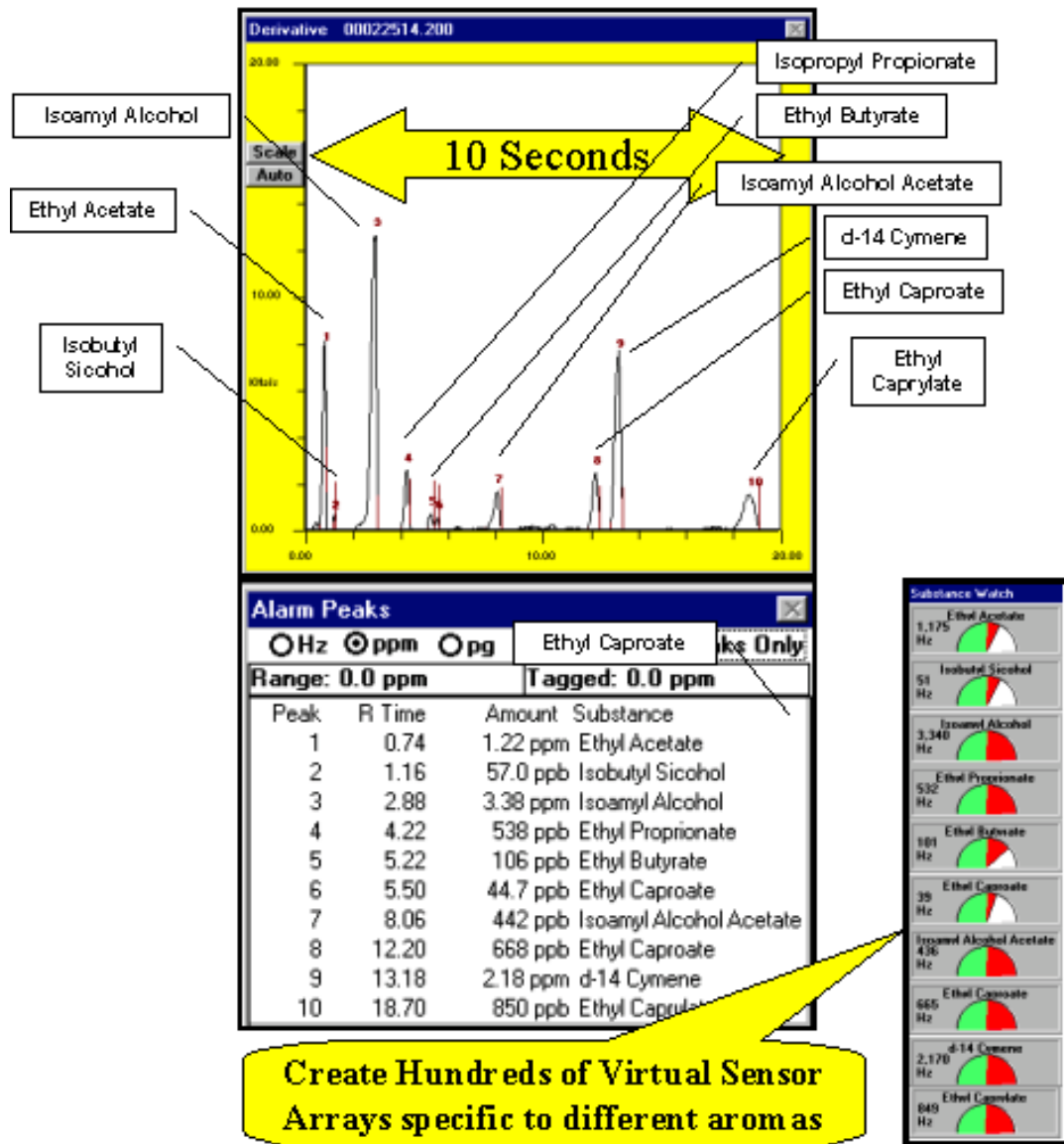
zNose™ Analysis of Whiskey



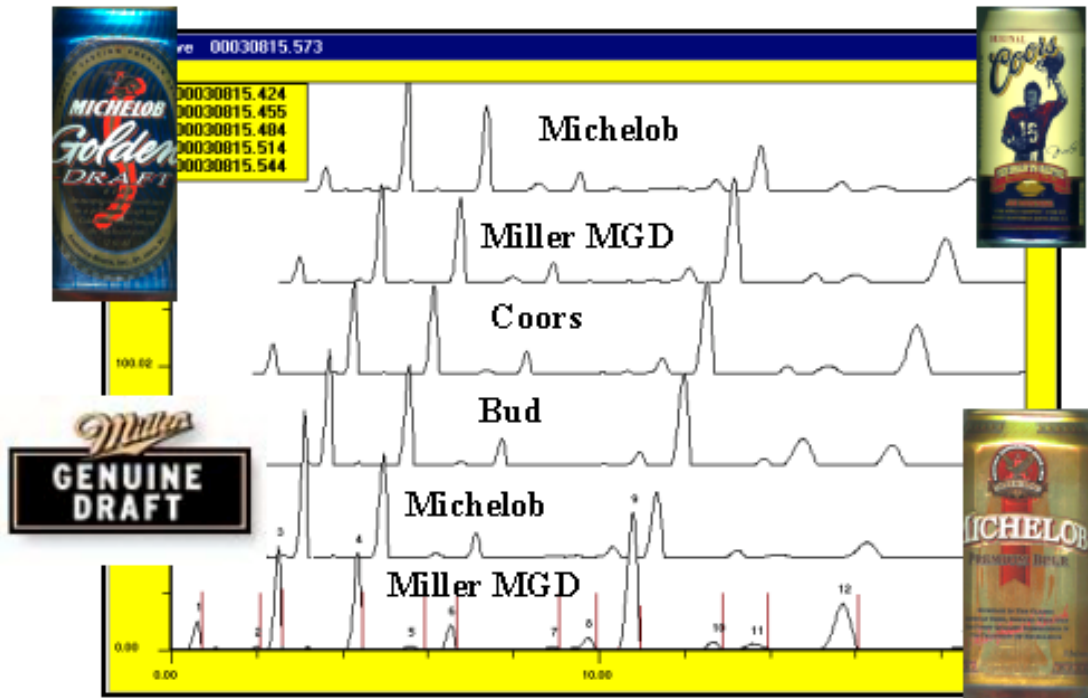
Peak	R Time	Amount	Substance
1	2.75	102.409 Hz	JD-1
2	4.62	959 Hz	JD-2
3	8.06	517 Hz	JD-3
4	13.64	135 Hz	JD-4
5	13.43	700 Hz	JD-5
6	18.20	20 Hz	JD-7



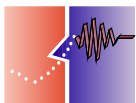
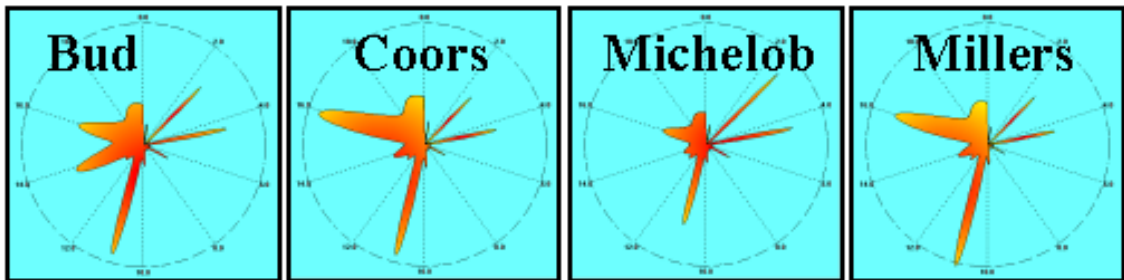
Now You can Quantify the Chemistry of a Wine's Aroma in Seconds !



Comparison of 4 Popular American Beers



20° Detector, 3.5 Second, 4.5°C/Second, 10 Second Sample



Summary

- **zNose™ technology**
 - 10 Second Speed with true ppt sensitivity
- **Virtual Chemical Sensor Arrays**
- **True Olfactory Images**
- **Only Government Validated Electronic Nose : EPA/FDA Methods**
- **Virtually all Foods and Beverages**
- **Save Time and \$\$ with demonstrated 30 day (or less) payback period**

For more information visit our web sites :

www.estcal.com

www.zNose.com

