



Aroma & Taste Analysis Services

Optimize the Sensory Features of your Products



- > Product Formulation
- > Product Quality
- > Claim Validation

The instrumental sensory solution

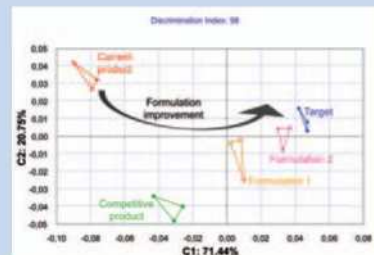


Laboratory Services

› Sensory Solutions for Product Development

Benchmarking

- ▶ Evaluate the differences between two products
- ▶ Compare the aroma / taste of candidate formulations to competitive products
- ▶ Faster formulate products that meet market target criteria



Comparison of various formulations of a same product
Formulation 2 is the closest to the target

Product Optimization

- ▶ Evaluate if there is a difference between 2 products when:
 - changing recipe or process
 - enhancing a sensory attribute
- ▶ Select the best formulation among various candidates in order to match your target



Product Validation

■ Stability & Shelf life of raw materials and finished products

- ▶ Select the most stable ingredients including flavors, additives, enhancers
- ▶ Study efficiency of stabilizing agents
- ▶ Measure sensory stability over time

■ Correlation with consumer preference tests

- ▶ Establish the link between consumer tests and analytical sensory evaluation for future product validation

■ Validation of shipment and storage conditions

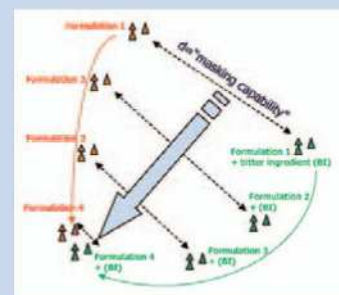
- ▶ Measure stability under current storage conditions (temperature, light, humidity, ambient air, etc) including sensory features

■ Taste and off-odor masking

- ▶ Assess masking efficiency

■ Packaging interactions

- ▶ Assess impact of packaging on product sensory stability
- ▶ Detect possible off-flavor contamination



Comparison of various formulations of a same product
Formulation 4 achieves the best taste masking

Scientific references

- | | |
|------------------------|---|
| Tragon | ▶ Comparison of sensory and consumer results with electronic nose & tongue sensors for apple juices, Food Quality & Preference 13, 2002 |
| Wild Flavors | ▶ Innovation and quality for food & beverage ingredients with the Electronic Nose, Testimonial from Wild Flavors on Alpha MOS website |
| AgriFood Canada | ▶ Use of the Electronic Nose and Gas Chromatography-Mass Spectrometry to Determine the Optimum Time of Aging of Beer, Master Brewers - Association of the Americas Technical Quarterly Vol. 39, N°2, 2002 |
| Monsanto | ▶ The Application Of Electronic Nose for Edible Oil Analysis, Oral presentation at Pittcon 2007 |
| Pepsi Cola | ▶ A taste sensor for ingredient screening of bitterness inhibition in Acetosulfame-K and Saccharin-Na in beverages, Presentation at the Eastern Analytical Symposium 2003 |

Laboratory Services

› Sensory Solutions for Production & Quality Control

Supplier validation

- ▶ Determine if a new supplier conforms to the expected chemical and sensory specifications
- ▶ Assess shelf life of supplier raw materials
- ▶ Compare various suppliers batch consistency



Validation of raw materials

- ▶ Control the conformity of raw materials upon receipt

Batch to batch consistency testing

■ Evaluation of product conformity

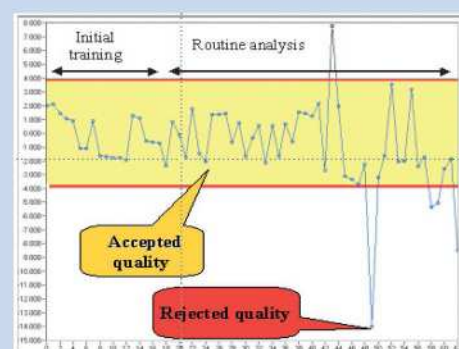
- ▶ Compare the quality of production with internal standards
- ▶ Detect unexpected contamination or defects

■ Check stability of production over time

- ▶ Follow-up target indicators

■ Validation of production site

- ▶ Check if products from a production line conform to the standards defined in the reference site



Quality Control Card showing acceptable quality (in yellow) and out of specifications zone (in white)

Consumer claim processing

■ Production traceability

- ▶ Analyze the nature and origin of the issue
- ▶ Validate shipment and storage conditions
- ▶ Control quality indicators
- ▶ Identify molecules responsible for off-odor / off-taste

■ Strengthen documentation

- ▶ Include analytical measurement proof to back up consumer claims (regulatory affairs, quality assurance)



References & customer testimonials

- | | |
|--------------------------|--|
| CP Kelco | ▶ Electronic Nose and Electronic Tongue technology to measure sensory properties of beverages, Presentation at IFT Annual Meeting 2007 |
| CSIRO | ▶ Fast Aroma Analysis of Cabernet Sauvignon and Riesling Grapes Using an Electronic Nose, Presentation ASEV Annual Meeting 2007 |
| NZDRI | ▶ Aroma quality of dairy products, Testimonial from New Zealand Dairy Research Institute on Alpha MOS website |
| BioSpringer | ▶ Food flavors quality control, Testimonial from BioSpringer on Alpha MOS website |
| CIRAD | ▶ The electronic nose: a fast and efficient tool for characterizing dates, Fruits, 2007 |
| Sabic | ▶ Quality Control of Polymer Pellets, Testimonial from Sabic on Alpha MOS website |
| Sapporo Breweries | ▶ Application of a New Electronic Nose with Fingerprint Mass Spectrometry to Brewing, J. Am. Soc. Brew. Chem. 2005 |

Why choose Alpha M.O.S. ?



Complete evaluation including human perception & analytical tests

Turnkey solutions to help you make the right decision
Expert consulting and training

■ Experienced and Customer focused laboratory team

- ▶ The major Food companies in the world work with us
- ▶ Strong understanding of aroma & taste in the highly competitive food industry
- ▶ Fast results adhering to project deadlines



■ Sensory evaluation solutions

- ▶ Alpha M.O.S. proprietary high-tech aroma and taste analyzers



Olfactory fingerprint analysis with Electronic Noses

Detection technologies: Metal Oxide Sensors, Mass spectrometry, Gas chromatography



Taste fingerprint analysis with Electronic Tongue

Detection technology: ChemFET sensors

- ▶ Traditional sensory panel evaluation

Analytical tests:

- Descriptive tests: description of differences between products
- Discriminating tests: are products different?

Hedonic tests: do you like / dislike products?



■ Analytical methods



- Gas Chromatography - Mass Spectrometry (GC/MS)
- Gas Chromatography - Olfactometry (GC/MS – GCO)

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