

HIGHLIGHTS

PRODUCT DEVELOPMENT AND BATCH VARIATION MONITORING

Interview with Kyowa Hakko

ALPHA MOS ANALYTICAL SERVICES

ALPHA MOS REFERENCE CUSTOMERS

STABILITY TESTING IN THE FLAVOR INDUSTRY

LAST INNOVATION Multi-Area Statistical Quality Control Charts

LITERATURE

New applications notes
New technical notes

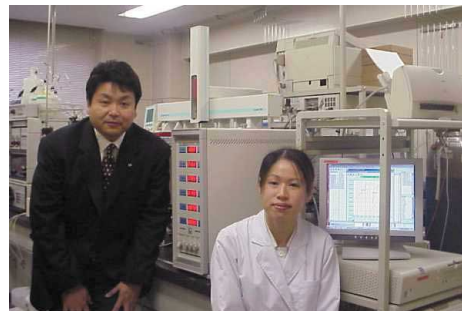
EXHIBITIONS AND WORKSHOPS 2003

PRODUCT DEVELOPMENT AND BATCH VARIATION MONITORING

INTERVIEW WITH KYOWA HAKKO CO. Ltd., JAPAN

AN INNOVATIVE FOOD MANUFACTURER IN FLAVORS AND SEASONINGS

"One of our objectives is to provide our customers with high quality seasonings. We have done this since 1961, the year we developed a technique for producing Mono Glutamate Sodium (MSG) using a fermentation process. The key for our customers success and our success is the ability to provide better quality products more rapidly than our competitors. We therefore invest in research and development in the field of food quality in order to advise our customers on how to create better products.



Mr. Hiroaki Iwasaki
Kyowa Hakko Kogyo Co., Ltd.
Food Development Department

Ms. Aki Nakagawa
Kyowa Hakko Kogyo Co., Ltd.
Foods and Liquors Research Laboratories

THANKS TO ALPHA M.O.S. INSTRUMENTS, A FASTER PRODUCT DEVELOPMENT

Our work with the FOX instrument helps us to understand better sensory specifications and acceptance (consumer liking) of our competitors' products and ours. When we introduced our new seasoning "KOKU-MI", surveys showed that stews, soups, or curries tasted better than just traditional stewing. The FOX allowed us to develop this new seasoning more rapidly than if we used just our traditional evaluation systems.

The FOX Electronic Nose has been used for R&D purposes for product development and for monitoring batches to batches variation of our products. The ability to manufacture high quality products consistently is essential for maximum customer satisfaction. The electronic nose technique is now established along side our more traditional evaluation systems by humans, GC-MS and MS-PAK.

We will use soon the ASTREE Electronic Tongue for the seasoning and soup applications."



NEW ANALYTICAL SERVICES

Alpha MOS, with its state of the art electronic olfaction laboratory, provides a full range of analytical services for the Pharmaceutical, Food and Beverage, Cosmetic and Environmental industry.

These services are performed in a confidential manner to determine a full range of quality control. Each service project is specifically designed to define the analytical objective, and select the samples needed for the study. The full scientific findings are summarized in a detailed report.

MAIN APPLICATIONS IN THE FOOD / BEVERAGE AND COSMETIC INDUSTRIES

- Shelf life of raw materials and finished products, storage effects
- Determination of aroma stability (quantitative or qualitative)
- Selection of the most stable ingredients or blends
- Flavor scalping analysis
- Packaging interaction or permeability
- Residual solvents in packaging or printing inks
- Fraud analysis
- Taste masking of ingredients like sweeteners
- Substantivity of perfumes in various matrices
- Efficiency of deodorants
- Interaction of cosmetics products with various skin types



HOW TO PROCEED

- 1) An Alpha MOS Analytical Services Coordinator defines the application by way of a questionnaire and interviews.
- 2) Based on your needs, an experimental procedure and a methodology are defined.
- 3) A quote is proposed according to the number of days that will be spent to perform the analysis.
- 4) A full report including description of the optimization of the analysis, reproducibility and linearity tests and analytical data supporting the conclusion of the study in a simple to read format is provided.
- 5) Consultation and assistance in data interpretation is always available.

To request information, please contact Alpha MOS...



REFERENCE CUSTOMER LIST

IN 2002, WE HAVE INITIATED A REFERENCE CUSTOMER PROGRAM...

- Lyondell, USA - Petrochemical application: QC of pure chemicals and foam
- University of Manitoba & Canadian Food Inspection Agency, CANADA - Food and environmental applications: Fish freshness - detection of swine odors – analysis of stack
- Michigan State University, USA - Food and packaging application : flavor degradation of cheese, detection of bacteria and detection of off-odors in plastic film
- BMS (Bristol Myers Squibb), USA - Pharmaceutical application: Masking of drug bitterness
- Merck, USA - Pharmaceutical application: flavor shelf life study
- Kyowa Hakko, JAPAN - Food applications: flavors and seasoning
- Basell, GERMANY - Packaging: Quality Control of PE pellets for bottle
- Studio de Création de Parfumerie, FRANCE - Cosmetics and Perfumes: formulation before product launch, control of raw material and finished products

... ARE SOME OF OUR REFERENCE CUSTOMER WITH THEIR MAIN APPLICATIONS.

STABILITY TESTING IN THE FLAVOR INDUSTRY

Following the development of the best formulation, it is imperative that the formula is stable and that the shelf life meets consumer requirement. Why " Shelf life "? The product must be stable and effective for a period long enough to cover from manufacturing to when the consumer uses the last drop of the product.

WHEN FORMULATION AND STABILITY SUFFER, SUBSTANDARD PRODUCT COULD RESULT... AND CUSTOMERS LOST!

Can you imagine the effects of storage period on hops, malt or spices or the effects on cheese or milk powder,... under the extreme summer temperatures reached during the shipment by truck during mid July in Phoenix or Houston? of the packaging on the aging of beverages? The stability of products can be altered by a large variety of environmental factors such as temperature, humidity and light conditions over a defined time period.

Stability testing can define the most stable aroma or flavoring and aid in the selection of ingredients that when integrated into a formulation will provide the best product based on market expectations and the stability needed to insure good shelf life.

The tools available to the laboratories require time consuming, expensive manual tests or cumbersome analytical or organoleptic procedures, with lengthy sample preparation. The data provided are ambiguous or partial in their assessment.

Alpha MOS systems are a direct help to get the formulation right the first time and to have the data to make the right choices.

THE SELECTION BETWEEN TWO FLAVORS: A VERY COMMON ISSUE

In order to monitor the evolution over time of two fruit aromas, a comparison of the two flavors in the matrix over time was made under sunlight and temperature stress conditions in order to accelerate the shelf life testing. For both flavors A&B in the matrix, the distance or degree of change between the flavored matrix at different days and the reference was calculated.

WHICH IS THE BEST FOR MY FORMULATION? FLAVOR A OR FLAVOR B?

The data clearly defines that matrix with flavor B is more stable under the temperature and time conditions tested. While some change is evident, the matrix is stable through day 21 after which a larger degree of change appears. It would be recommended that flavor Compound B be integrated in the formulation rather than the flavor compound A.

The data provided by Alpha Mos instruments can also help to:

- Define the breaking points in quality due to aging,
- Detect spoilage due to unsuitable storage conditions,
- Compare various formulations in terms of stability using accelerated aging,
- Assess formulation stability in different packaging (such as glass versus PET, modified or aseptic packaging)

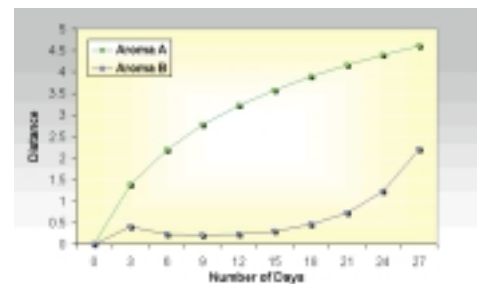
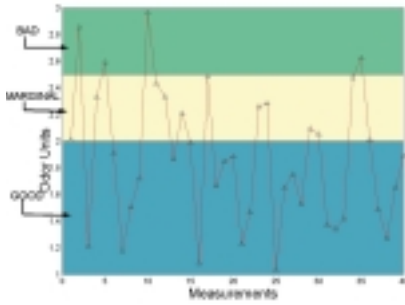


Figure 1: Flavor changes over time. Distance between the reference sample and the sample after x days under heat stress
Application note # 59

THANKS TO PRECISE AND EASY TO OBTAIN RESULTS

The Fox Electronic Nose defines the products offering the best performance attributes in terms of flavor or aroma stability. The speed of the analysis makes it possible to test with a lower cost a larger variety of flavors and ingredients candidates under a broader range of experimental conditions.

LATEST ALPHA M.O.S INNOVATION FOR QUALITY



Fast and Easy to interpret charts for Quality Control...

The new Statistical Process Control charts allows to define multiple quality groups according to odor distances, concentrations or sensory scores associated with a descriptor such as Good, Medium, Bad. The online identification will give a comprehensive answer (Good, Medium, Bad) instead of a number.

A WORLDWIDE NETWORK AT YOUR SERVICE

Germany...Thailand...Switzerland...Ireland...Greece...China...

In October 2002, Alpha MOS had the pleasure to gather its distributors from around the world. 25 distributors from 17 countries received a theoretical and practical training on the whole Alpha MOS product range including its new products (E Tongue and Modules) and applications dedicated to the pharmaceutical and environmental industry.

...Korea...Japan...England...Romania...Canada...Spain...Portugal...



LITERATURE

New Application Notes

AN56: Milk Aroma
AN57: Rice analysis (origin and quality)
AN58: Fish shelf life
AN59: Aroma shelf life

New Sampling Technical Notes

NS01: With the Fox
NS02: Autosampler HS100
NS05: Solid Phase Micro Extraction
NS06: (SPME) Kit Technical features and performances
NS07: Flow cell
NS08: Petri dishes
NS09: Cooler tray



Articles

Pharmacy

"The Electronic Tongue: A new cutting edge technique for the Pharmaceutical Industry"
Manufacturing Chemist, Special Tablet. *Technology Issue, Oct 2002*

Edible Oils

"QC/QA of finished and raw materials in the oils and fats and the oleochemical industry: Ensuring consistent quality, neutral taste and odor". *Inform June 2002*

Beer

"Use of the electronic nose and Gas chromatography - mass spectrometry to determine the optimum time for aging of beer". *Food research program, agriculture and agri-food Canada, MBAA TQ, vol.39, n°2 - 2002*

Presentations

□ Neural Network and Electronic Sensor Array for determination of E.coli and volatile metabolites in nutrient media. (Chulalongkorn University, Bangkok, Thailand and Michigan State University)

□ Correlation between analytical and sensory analysis based on an electronic olfactory sensing technology (Michigan State University)

□ Alpha M.O.S. Electronic Tongue: a developing high throughput screening assay for bitterness inhibition of acesulfame-K and taste modification. (Dr Glenn M. Roy, Pepsi-Cola Co. Eastern Analytical Symposium, New Jersey, USA)

EXHIBITIONS & WORKSHOPS 2003

PITTCON

Orlando, Usa
March 10-13. 2003
Booth 3717
www.pittcon.org

ANUGA

Köln, Germany
April 8-11. 2003
Booth 033
www.anuga.org

A.S.T.M.

Seminar on sensory evaluation of materials and products
Kansas City, USA
April 9. 2003

EUROFORUM Training

Mesurer et caractériser le sensoriel
Paris, France
June 11-12. 2003

IFT

Chicago, Usa
July 13-16. 2003
www.ift.org

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