POLY SCIENTIFIC

Alpha MOS

SENSORY ANALYSIS SOLUTION

ASTREE

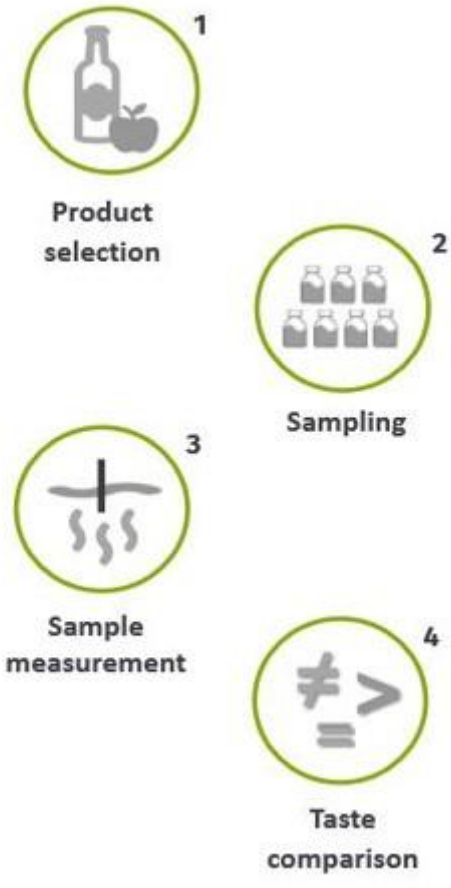
Taste analysis

AREAS OF **expertise**

Specialized in electronic sensing systems, Alpha MOS is positioned as the world leader in the design and development of instruments dedicated to the smell, taste and visual aspect (color and shape) analysis.
To answer the needs of major industries, Alpha MOS offers reliable and fast solutions that can control the sensory quality of their products and secure their manufacturing process.

TASTE **testing principle**

ASTREE electronic tongue is an instrument dedicated to the analysis of your products' taste. This technology is based on potentiometric measurement using sensing electrodes that are cross-sensitive to different molecules responsible for the taste. It assesses the overall taste profile, ideal for comparison.



1/ Select several samples with different taste properties (different recipes for product development and benchmarking, active formulation and placebo for taste masking, etc.) .

2/ An autosampler allows repeatable contact of sensors with the liquid by constant stirring and timing during analysis.

3/ An array of 7 sensors records the potentiometric variation between electrodes. Each sensor is cross-sensitive to different molecules or ions dissolved in matrix . The information combination of 7 sensors is used to investigate taste profile variation since they are complementary.

4/ Thanks to AlphaSoft , direct ranking can be done for sourness ,saltiness and umami based on sensor selectivity and for molecule-related ranking by the standard addition method .the comparative results are displayed as taste mapping or ranking with relative score for easy-to-read information .

Sensors' measurement method can be adapted to your matrix .**Please contact us to organize a feasibility study!**

ASTREE

Taste analysis

General features

- Acquisition board: acquisition frequency 10 Hz
- Main board for data processing: RS232 interface
- Power supply: 110-120 VAC (power consumption 3.15A) / 220- 240 VAC (power consumption 1.6A)
- Dimensions: 260 x 300 x 100mm (L x W x H)
- Mass: 25kg
- Operating conditions: constant ambient temperature (15 to 25°C, ± < 3°C)

Autosampler

- Programmable sample sequence run
- Fully automated sensor analysis procedure
- Analysis: 3 min /measurement
- 16 or 48 position carrousel (min. 80mL&20mL of liquid sample respectively)
- Reproducible stirring and measurement conditions
- Line voltage: 100-200V;220-240V(power consumption 40 VA)

Liquid sensors

- ChemFET sensor technology (chemical modified Field Effect Transistor)
  - Organic membrane interacting with ionic, neutral & chemical compounds
  - Measurement of a potentiometric difference between the sensors and a reference electrode
- Array of 7 liquid sensors sensitive to dissolved taste compounds
  - Sensors set directly dipped into the liquid product for analysis
  - Sensitivity to a wide range of compounds

Application range

- Food taste quality inspection, product taste period setting
- Food market preferences assessment, trend analysis
- Statistics of taste spectrum charts of foods and production of taste characteristic maps of products
- Taste (bitterness) masking for functional food and pharmaceutical
- Placebo taste matching for pharmaceutical
- New food formulation development
- Analysis of taste evolution, storage conditions for oral medications, Aging or packaging stability studies or Packaging taste migration
- Stability study of different formulas under natural aging and accelerated aging
- QC and Authenticity identification application of many types of food such as beverages, white wine, red wine, tea etc.

ASTREE

Taste analysis

AlphaSoft

Compatible with Windows®7 and windows®10.This software controls and monitors the instrument and includes a full chemometrics package for data processing.

Statistical analysis

- Data acquisition: After data acquisition, Potentiometric signals of 7 sensors are integrated to reflect the difference between samples.

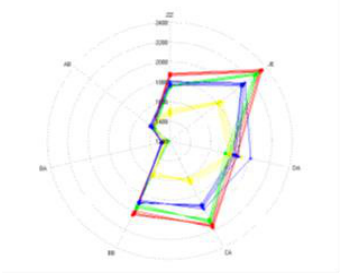


Figure 1. data radar map

- PCA : Mapping of the multi-measurements of all samples on a 2-axes graph that best highlights differences between samples with no training of the instrument required.

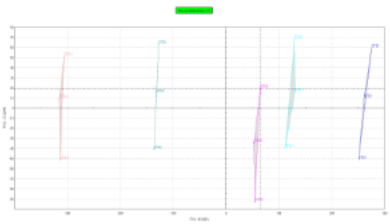


Figure 2. PCA map

- PLS: quantitative model, can be used for concentration quantification, can also be used to correlate with human sensory panel to predict sensory score .

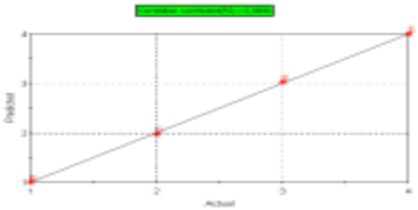


Figure 3： PLS map

- Taste screening: the relative sourness, saltiness and umami intensity of each sample can be directly obtained, the taste difference between batches can be discovered, and guidance can be provided for the investigation of quality defects.

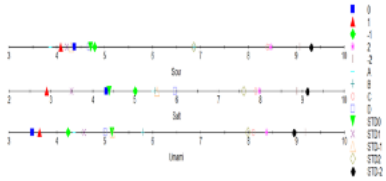


Figure 4： taste ranking

- Masking efficiency: evaluate the taste distance between placebo and formulation (including API-bitter ingredient). The smaller the distance, the closer the taste, which means the taste masking effect is better.

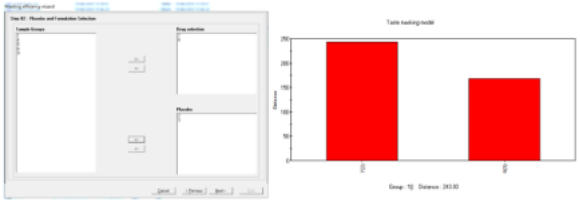


Figure5.masking efficiency map

- Standard Addition method (Taste ranking standard addition method): taste ranking for complex tastes, such as spiciness, bitterness, metallic taste, sweetness, etc.

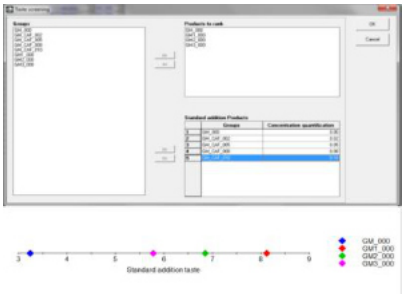


Figure 6. standard addition method result

- ➢ DFA,QC model (SQC,SIMCA) and Shelf Life mode are available.
- ➢ Sensor drift compensation procedure
- ➢ Data traceability with logbook and operating condition history

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