Applications

Picture: pixelio.de

> Food and flavour industry:

> Aroma research, flavour science, production process control

PTR-MS ONLINE MEASUREMENT OF FRUIT FLAVOUR IN THE NOSE SPACE AIR

PTR-MS with its online measurement capabilities enable researchers to quantify compounds in the nose space air of test persons.

A very low detection limit and a high time resolution allow for online breath by breath analysis.

Insights for aroma design and flavour research can be gained through correlations between individual food perception and measured in-nose aroma concentration.

RESULTS OF PTR-MS MEASUREMENTS - CHEWING OF STRAWBERRIES

Figure 1 shows a peak of isoprene with each exhalation occurring approximately every eight seconds, because of endogenous production of isoprene (red line). When strawberries are chewed (beginning after 80 seconds) compounds like methy-2methyl-butanoate, appear with each exhalation.

PTR-MS

> very low detection limit (ppt-range)
> real time measurement
> online monitoring
> no sample preparation

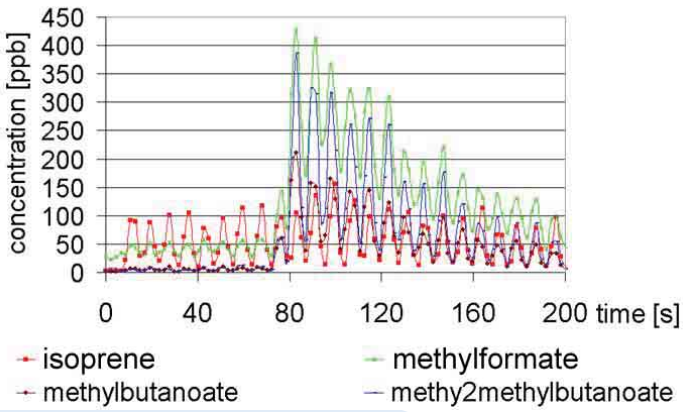

Fig. 1: Nose space measurement with PTR-MS, when strawberries are chewed.

IONICON ANALYTIK

MEASUREMENT OF ESPRESSO COFFEE HEADSPACE WITH PTR-MS

Analytical studies and sensory profiling are performed on different commercially available espresso coffee products. On-line analysis using PTR-MS is used to obtain chemical information about difference in composition of the coffee headspace characterizing the different coffee blends. In addition, an expert panel trained for coffee tasting describes each sample by scoring 10 key flavor attributes on a 10-point scale.

The overall sensory description of each sample is correlated with the analytically obtained differences in chemical composition in order to develop a statistical tool to predict the sensory profile based on analytical data. In a second step, the prediction is validated using a new series of coffee blends, which differ in the aroma profile and which are not included in the development of the predictive tool.

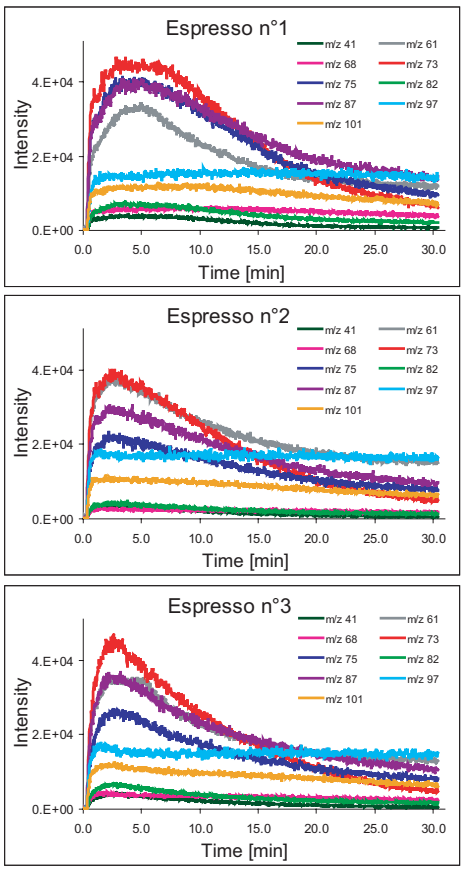

Fig. 2: PTR-MS online measurement of espresso coffee headspace.

RESULTS OF PTR-MS DATA IN COMPARISON WITH SENSORY PROFILES

The overall sensory prediction of the new blends based solely on the analytically generated data shows a good match with the sensory profiles independently obtained by the expert panel.

This novel and efficient approach of characterizing the aroma of coffee blends by on-line analysis may shorten the time required for the development of new products and improve quality control in a more automated and objective manner. Figure 2 shows espresso coffee online headspace measurement with PTR-MS.

Figure 3 indicates that a correlation between the prediction resulting from PTR-MS data and the sensory profile of the trained panel exists.

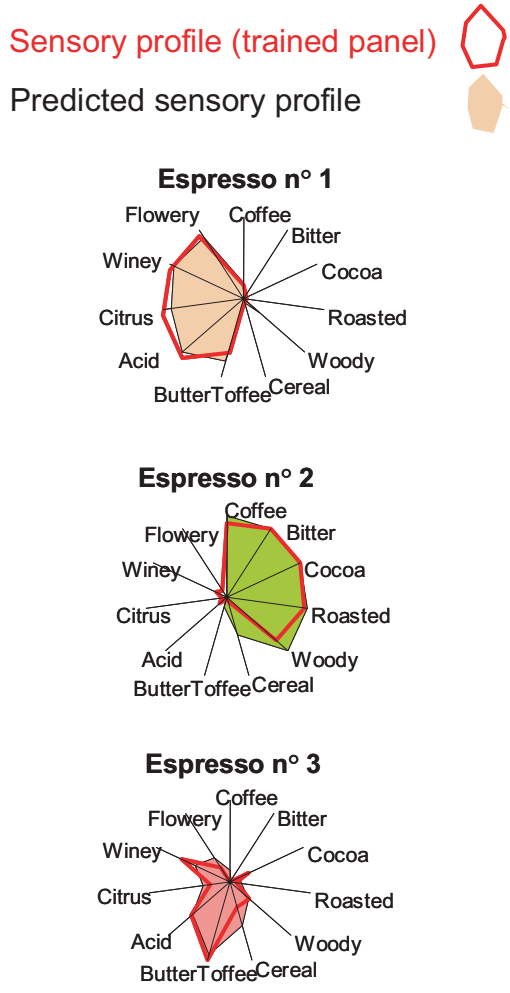

Fig. 3: Validation of flavour prediction by a trained panel.

A-6020 Innsbruck • Technikerstrasse 21a • Telefon: +43 / 512 / 50 74 800 • Fax: +43 / 512 / 50 79 818 • Mail: info@ptrms.com • Internet: www.ptrms.com