

Rapid analysis of volatile flavour compounds using API-MS

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One of the greatest challenges to the analytical chemist is that there never seem to be enough hours in the day!! Typically, for analysis of volatile compounds in the food industry, gas-chromatography coupled with mass-spectrometry is the chosen method yet one of the greatest disadvantages with this technique is that analysis time can take between 30 minutes and an hour per sample. Another issue, in flavour research, is that instruments are used to identify and quantify the profile of chemicals present during eating. The problems with this are that a) eating is a dynamic process that cannot be approximated through collection of equilibrium headspace measurements, and b) often the chemical profile is modified through interaction with salivary components and mucal membranes.

Instrumentation has been developed that circumvents these problems. The MS Nose is a gas phase analyser which interfaces with an atmospheric pressure ionisation mass spectrometer. This allows for real time analysis of gas phase samples such that each headspace profile can be captured in a matter of minutes. In addition, this instrumentation can also be used as a non-invasive technique to monitor volatiles in the expired air from the nose. Correlating these two methods can provide valuable information on the behaviour of volatile aroma compounds in different matrices and interactions that may take place between the compounds and saliva.

This presentation shows some results of headspace analyses using this rapid real time function to probe properties of volatile flavour chemicals in different media. Data will also be presented on other key uses of the gas phase analyser in flavour research such as breath by breath analyses and the measurement of the effect of volatile: saliva interactions.
