



Identification of unknown components using GC-MS and LC-MC

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The presence of unknown components is a common problem during production and in end products. Such components often cause unwanted side-effects such as discolouration, smells, loss of specific properties and side reactions. In these cases it is important to be able to identify and quantify the unknown components quickly and effectively. DSM Research has a wide range of techniques and expertise to do this.

Firstly, the unknown component is often separated using gas or liquid chromatography (GC/LC). Other techniques, such as mass spectrometry, NMR and infrared spectrometry, are then used for identifying the unknown component. We routinely combine GC or LC with mass spectrometry to identify the structure of unknown components.

This is done by direct comparison of the spectra obtained with those in our databases. These databases have been built up over the years and are a lot more comprehensive than those commercially available.

Complex problems such as unwanted product discolouration can be addressed by means of a multidisciplinary approach. The components that cause such product discolouration are usually present in low concentrations. They can be characterized, however, by means of LCMS hyphenated with a diode array detector. The former is used for mass differentiation and the latter for its ability to distinguish colours. Colour problems can often be resolved in this way.

If an unknown component cannot be found in our databases, we normally isolate the component by techniques such as preparative GC and LC. Additional information about the structure is obtained by, for example, NMR and IR, which can then be used to identify the component.

If you would like to know more about our expertise please contact us.

For more information:
info.resolve@dsm.com
tel: (31) 46 476 0100
fax: (31) 46 476 1200

