IDENTIFICATION AND QUANTIFICATION OF MOLECULES IN DIFFERENT MIXTURES BY NMR

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The search for molecules in simple and complex mixtures represents a crucial challenge in the field of analytical chemistry. This process involves the identification and characterization of chemical components within matrices that can range from pure solutions to complex biological samples. Nuclear Magnetic Resonance (NMR) spectroscopy, plays a fundamental role in this research, enabling the identification and quantification of molecules.

In particular, with regard to the quantification of molecules,NMR allows for the quantitative analysis of mixtures without the need for extensive sample preparation or calibration curves. The technique can provide accurate concentration measurements of individual components within a mixture.

The development of advanced software for NMR spectroscopy has revolutionized the identification and quantification of molecules in complex mixtures. Bruker has recently developed a dedicated software – Advanced Chemical Profiler (ACP) - including sophisticated algorithms and machine learning techniques to analyze NMR spectra, providing accurate and reliable results.

By automating the interpretation of NMR data, ACP significantly reduces the time and expertise required for manual analysis. It can identify molecular species, even in highly complex mixtures, and quantify their concentrations with high precision. The integration of user-friendly interfaces and robust data processing capabilities ensures that researchers can efficiently manage and analyze their samples.

In this presentation, we will explore practical applications.

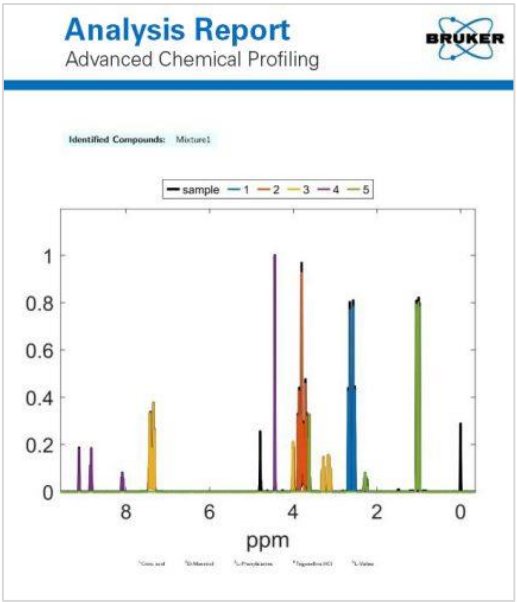

Figure 1. Advanced Chemical Profiling report one page example