CASE STUDY

Food

FT-IR Analysis Critical to Fast Characterisation of Unknown Contaminants in Food

Advances in analytical chemistry mean there are a now variety of techniques that can be used in the identification of unknown contaminants. The challenge for testing laboratories is to balance the use of established methods, such as IR, with more specific techniques such as LC/MS. The goal being efficient and fast sample testing. This enables clients to benefit from rapid sample throughput (from processing to analysis and final reporting), and have the ability to respond swiftly to any urgent requests for investigation.

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"Recording IR data, using the Spectrum 400 system, is a critical part of the problem solving process in characterising samples. The systems performance in mid-IR and near-IR coupled with the ability to gather data in a matter of seconds saves hours of lab work. Avoiding tedious HPTLC runs, we can now efficiently determine the next steps required for rapid identification of unknown samples."

James Neal-Kababick, Director, Flora Research Laboratories, USA.

Protecting consumer safety with FT-IR analysis

Reports of children falling ill having consumed a particular brand of butter lead the manufacturers searching to quickly identify the source of contamination. After previous investigations were unsuccessful, the analytical team at Flora Research Laboratories were tasked with identifying the contaminant. The SpectrumTM 400 IR system is the first instrument used in any forensic situation at Flora Research Laboratories. Jim Neal-Kababick, Director at Flora Research Laboratories, commented, "With data generated in seconds, it gives clarity to the problem and allows us to rapidly determine the next step to secure compound identification".

Fast, non-destructive sampling increases productivity

Stains were clearly visible on the packaging of contaminated butter. Recording the IR spectra was very quick and easy. Cutting out a section of the packaging the spectra was collected using a sampling accessory (UATR); generating results in under a minute. Comparison of spectra showed the presence of a unique band only in the contaminated packaging. Indicative of an organic compound, an appropriate GC/MS was readily selected and the contaminant identified as a chemical used in insect pheromone baits. It was concluded that prior contamination of the packaging lead to leaching of the chemical into the butter and caused consumers to fall ill. This result was confirmed within one working day, enabling remedial action to be taken swiftly.

This non-destructive technique enabled the same sample to be used for both the IR and GC/MS analysis. This becomes increasing important for non homogeneous samples, or when sample is limited.

Company: Flora Research Laboratories

Business: Contract Testing Laboratories. Flora Research Laboratories is a leading independent full service testing laboratory specializing in the quality control and research of natural products, and dietary supplements. The birthplace of the emerging field of Phytoforensic science, Flora Research Laboratories are focused on using advanced technologies from microscopy to mass spectroscopy to protect the global food supply chain.

2009: Spectrum 400 MIR/NIR system used as the front line screening technique in all investigations.

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