Introduction

Fluoromethcathinone is a stimulant of amphetamine and cathinone chemical classes. In 2008, Flephedrone (4-fluoromethcathinone) and its positional isomer 3-fluoromethcathinone began showing up in online sales in several designer and recreational drugs. Flephedrone, marketed at times as a plant feeder, has been controlled by several US States and foreign countries while 3-fluoromethcathinone remains uncontrolled in most countries. However, both of these compounds are difficult to analyze by using the industry standard GCMS systems due to the identical molecular weight and chemical composition. However, with the addition of an FTIR detector to the GC, it is possible to identify between the two common isomers of this dangerous drug. Figure 1 shows the structure of these two compounds.

Product Overview

The IRD 3 designed from the chromatographer’s point-of-view and is unique in that it was designed to be used directly with a Gas Chromatograph (GC), and not just as a bench top FTIR. The IRD 3 seamlessly integrates the separating power of the GC with the molecular identification of FTIR.

For chromatographers looking to obtain more information about unknown samples, the IRD 3 is the perfect tool. Using a heated light pipe flow cell, the sample is kept in the vapor state while interacting with the IR band width. Keeping the molecular geometry intact during analysis provides unique and highly reproducible spectra.

Key Features

- Vapor phase FTIR for use with GC and GC-MS
- Low Maintenance with no moving parts
- Smallest footprint available saves bench space
- Dedicated vapor phase libraries
- Single sequence table operates the entire GC-IRD system

Figure 1.

3-Fluoromethcathinone  4-Fluoromethcathinone

Figure 2.
Conclusion

Figure 2 shows the results of co-eluting peaks when both these compounds are analyzed by GCMS and the mass spectra are indistinguishable. However, with the addition of an FTIR detector, figure 3 illustrates the completely different spectra provided and a library identification can properly identify the correct isomer. This example illustrates the tremendous power of the IRD to distinguish between compounds which are very similar structurally. It also points out the excellent complementary information that the IRD and MSD provide. The combination of these two instruments provide exceptional capability for qualitative analysis at a very high confidence level.