

APPLICATIONS OF SOFT IONISATION MS IN FORENSIC TOXICOLOGY

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Electron ionisation mass spectrometry interfaced with gas chromatography (GC/EIMS) has developed over the past 30 years into an integral part of forensic toxicology testing. Although chemical ionisation has been commercially available for nearly as long it has not gained the same wide acceptance. The arrival of atmospheric pressure ionisation techniques to interface high pressure liquid chromatography with mass spectrometers (LC/APIMS) has seen a rapid adoption of this instrumentation in forensic toxicology. In general terms this has happened because LC/APIMS is a very sensitive technique for toxicological analyses, at least as sensitive as GC/EIMS and sample preparation may be simplified due to LC compatibility with both polar compounds and aqueous samples.

Opportunities for using GC/CIMS will be presented as well as examples of toxicological analyses well suited to LC/APIMS. The latter include the analysis of anti-psychotics, digoxin, quaternary ammonium compounds used as muscle relaxants, glyphosate and drugs of abuse.

The rapid increase in the use of soft ionisation techniques such as electrospray (ESI) and atmospheric pressure chemical ionisation (APCI) in forensic toxicology needs to be accompanied by careful consideration of the information produced to ensure the identification requirement of forensic analyses is satisfied.