

Forensic Analysis of Explosives by LC/MS

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ABSTRACT: Liquid chromatography/mass spectrometry (LC/MS), combining good separation characteristics with highly specific and sensitive detection, is the method of choice for forensic trace analysis of explosives. Principles of operation and instrumentation of several LC/MS interface/ionization modes are described. Among the various LC/MS interfaces and ionization modes, electrospray ionization (ESI)-LC/MS in the negative-ion mode was found to be the most suitable for analysis and identification of trace amounts of explosives. Characteristic electrospray ions of explosives are mainly adduct and $[M - H]^-$ ions. Detection limits in ESI-LC/MS of the investigated explosives were found to be in the pg range.

KEY WORDS: Explosives, trace analysis, forensic identification, LC/MS, electrospray ionization, mass spectrometry.
