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Examination of Some Organic Explosives by Ion Mobility Spectrometry (IMS)

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**Abstract:** The increase in terrorist activities committed using explosives in recent years has generated the need for improved analytical methods that can accurately and quickly identify explosives and their residues. In this study such an analytical method is evaluated. In the first phase of the study, standard solutions and a standard mixture solution of TNT (2,4,6-trinitrotoluene), RDX (1,3,5-trinitro-1,3,5-triazocyclohexane), PETN (pentaerythritol tetranitrate) and TETRYL (2,4,6-trinitrophenylmethyl nitramine) were examined using ion mobility spectrometry (IMS). In the second phase, qualitative analysis of a real explosion residue was carried out and the explosive material used in the bomb was identified by analysing the acetone extract. In the third phase, a handswab sample taken from a suspect was analysed for trace explosive residues. Some advantages of using IMS for the detection of explosives and their residues were determined.

**Key Words:** Explosives, ion mobility spectrometry, trace explosive evidence, criminalistics.

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