GC-MS Analysis of Explosives

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Invited workshop presentation at the:
SYMPOSIUM ON FIRE AND EXPLOSION DEMS ANALYSIS AND SCENE INVESTIGATION LINKING THE SCENE LABOR,4TORY AND COURTROOM

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This talk will focus on aspects of GC-MS that are unique or important in the analysis of explosives. The talk will provide background information on sample introduction, including methods (liquid injection and thermal desorption, including SPME), temperature limitations and injection port configurations. Chromatography issues to be discussed will include column selection and chromatographic conditions for successful analyses. Mass spectral detection issues discussed will focus on the application of conventional ionization methods, including electron impact (EI), positive ion chemical ionization (PICI) and negative ion chemical ionization (NICI) modes. Characteristic ions and fragments formed from organic explosives in each ionization mode will be discussed. Aspects of peak identification and the use of extracted ion currents versus selected ion monitoring will also be discussed. The goal of the presentation is to assist those who are familiar with GC-MS methods to become proficient in applying the methodology to the analysis of explosives.