Identification of Chemical and Biological Warfare Agents in the Field by Ion Trap Mass Spectrometry: the Block II Chemical Biological Mass Spectrometer

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Designing, building, demonstrating, and producing an instrument that provides laboratory instrument performance in identifying both chemical and biological warfare agents in field deployment is a considerable challenge. The design and choice of hardware components is constrained by instrument volume, mass, and power limitations and the need for temperature, vibration, and radiation tolerance, and simple maintenance/repair. The analytical approach and software are shaped by the need to correctly detect and identify trace levels of multiple agents in the presence of the natural background as well as in large excesses of battlefield interferents, and to provide user-friendly, simple operation and self-diagnosis for a non-technical user. This presentation will describe the lessons learned in developing and producing the Block II Chemical Biological Mass Spectrometer, a fieldable ion trap mass spectrometer that meets these requirements. Recommendations also will be made for mass spectrometry technology for the next-generation chem-bio instrument.

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