

Towards Low-Cost and Application-Specific Field Mass Spectrometers

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Despite significant efforts being put towards commercialization of field mass spectrometers in recent years, these instruments have not yet been widely accepted by the market. In particular, it appears the compromised performance relative to lab-grade mass spectrometers and the relatively high cost of the field mass spectrometers continue to be barriers for wide-spread market acceptance. Additionally, current field mass spectrometers are still complex instruments: they require relatively intricate and complicated procedures for operation and also they produce data that are not always readily comprehensible, and therefore actionable, for field technicians. We recently completed an NSF I-Corps program to examine market demands for field mass spectrometers. I will present the findings of our study along with insights regarding potential strategies for successful commercialization of field mass spectrometers going forward.

Further, we have been developing a laboratory prototype of a miniature quadrupole time-of-flight mass spectrometer from scratch. This prototype serves as a platform for mass spectrometry research and also holds commercialization potential. We are currently focused on reducing the cost of the device itself and looking to introduce high performance, application-specific field mass spectrometers tailored to a range of industries. I will discuss some of our ongoing efforts in developing the laboratory prototype of our system.