Supplemental Information

Optimized Thermal Desorption for Improved Sensitivity in Trace Explosives Detection by Ion Mobility Spectrometry

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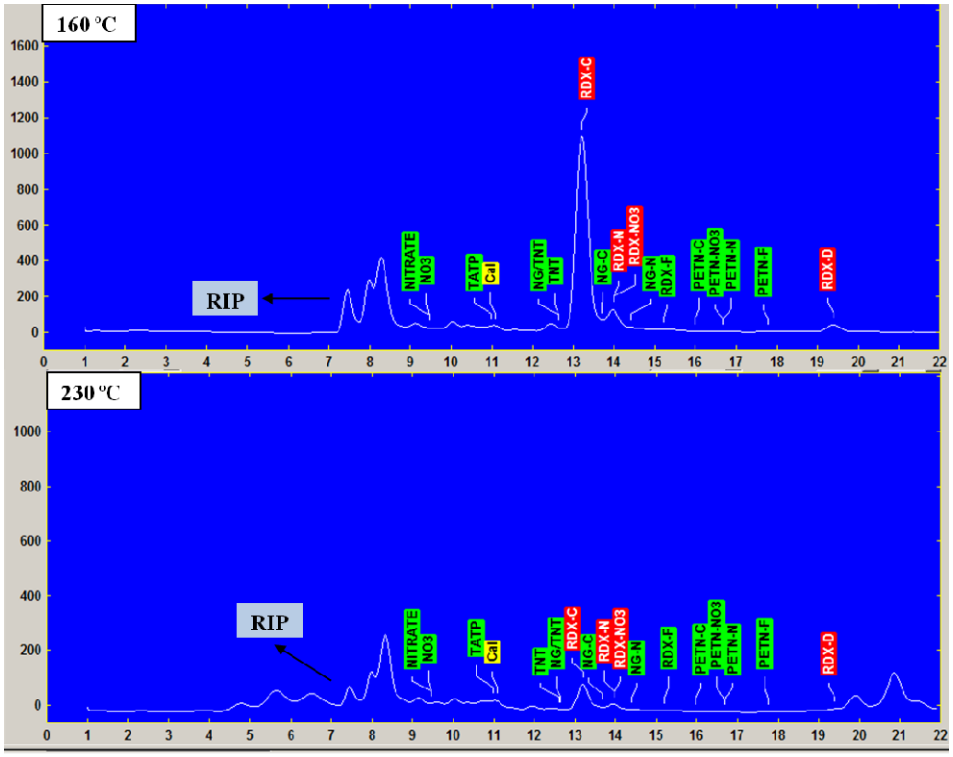
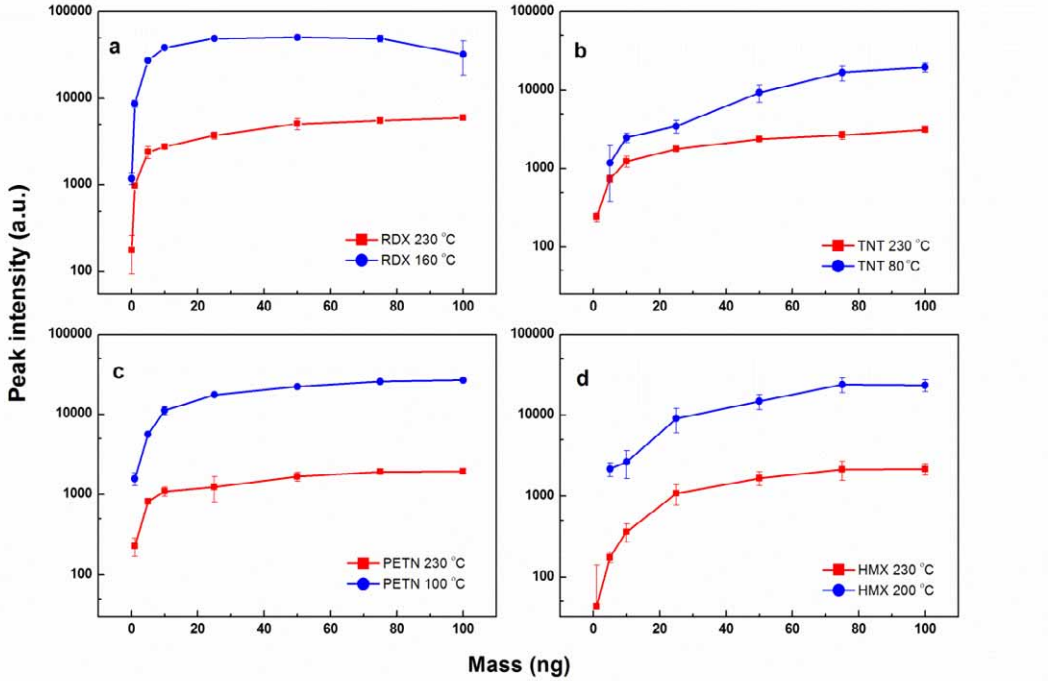
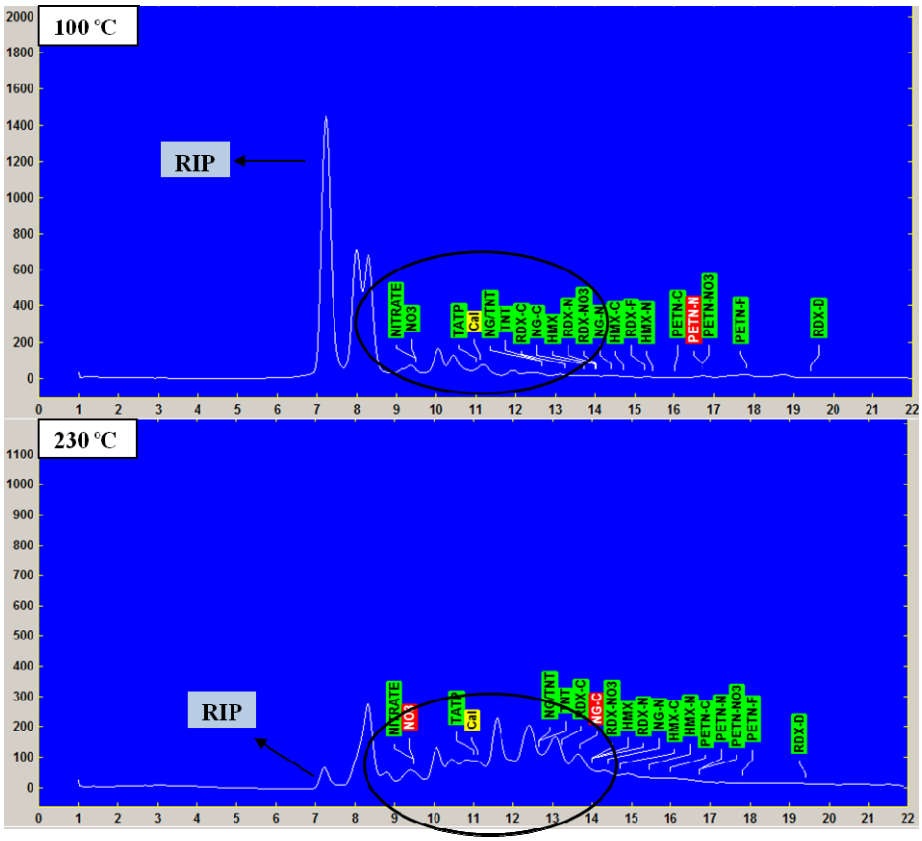


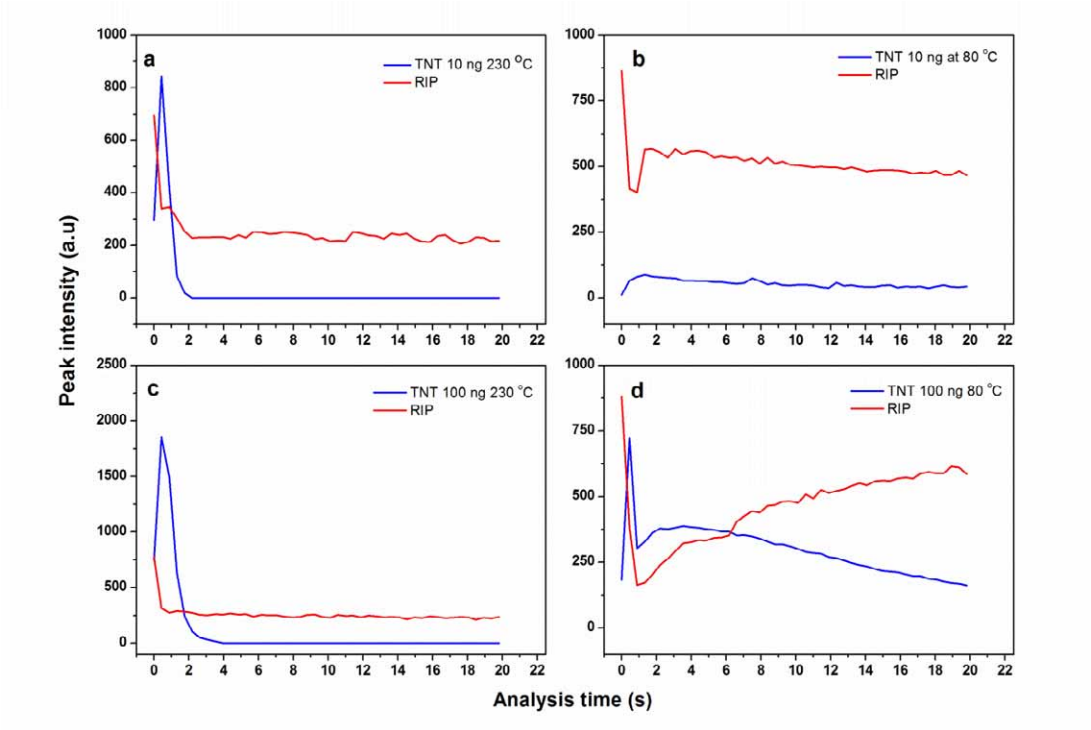
Sup Fig 1. Typical signal-to-noise backgrounds for RDX analysis at low and high desorption temperatures.



Sup Fig 2a – d. Response curves to standard desorber temperature versus optimized desorber temperature across the mass range of 0.1 ng to 100 ng; (a) RDX (b) TNT (c) PETN (d) HMX. An increase in sensitivity is observed across the operational range of the instrument validating the advantage of using lower temperatures to desorb the high explosives.



Sup Fig 3. Background contamination from manufacturer-supplied sample swabs at 100 °C and 230 °C desorber temperatures.



Sup Fig 4 a – d. Temporal profile for TNT and reactant ion peaks as a function of analyte concentration and desorption temperature; (a) 10 ng of TNT and 230 ºC desorber temperature (b) 10 ng of TNT and 160 ºC desorber temperature (c) 100 ng of TNT and 230 ºC desorber temperature (d) 100 ng of TNT and 160 ºC desorber temperature.