Detection of Inorganic Salt Based Home Made Explosives (HME) by Atmospheric Flow Tube – Mass Spectrometry

Robert G. Ewing*, Blandina R. Valenzuela, David A. Atkinson and Eric D. Wilcox Freeburg

Pacific Northwest National Laboratory, 902 Battelle Blvd., Richland, WA 99352, United States

Supporting Information

S2- Mass spectra of $NaClO_4$ and $Sr(ClO_4)_2$

S3- Signal fluctuations of the nitrate reactant ion and the hydrogen peroxide-nitrate adduct.

S4- Signal fluctuations of the nitrate reactant ion and the nitrate-nitric acid adduct.

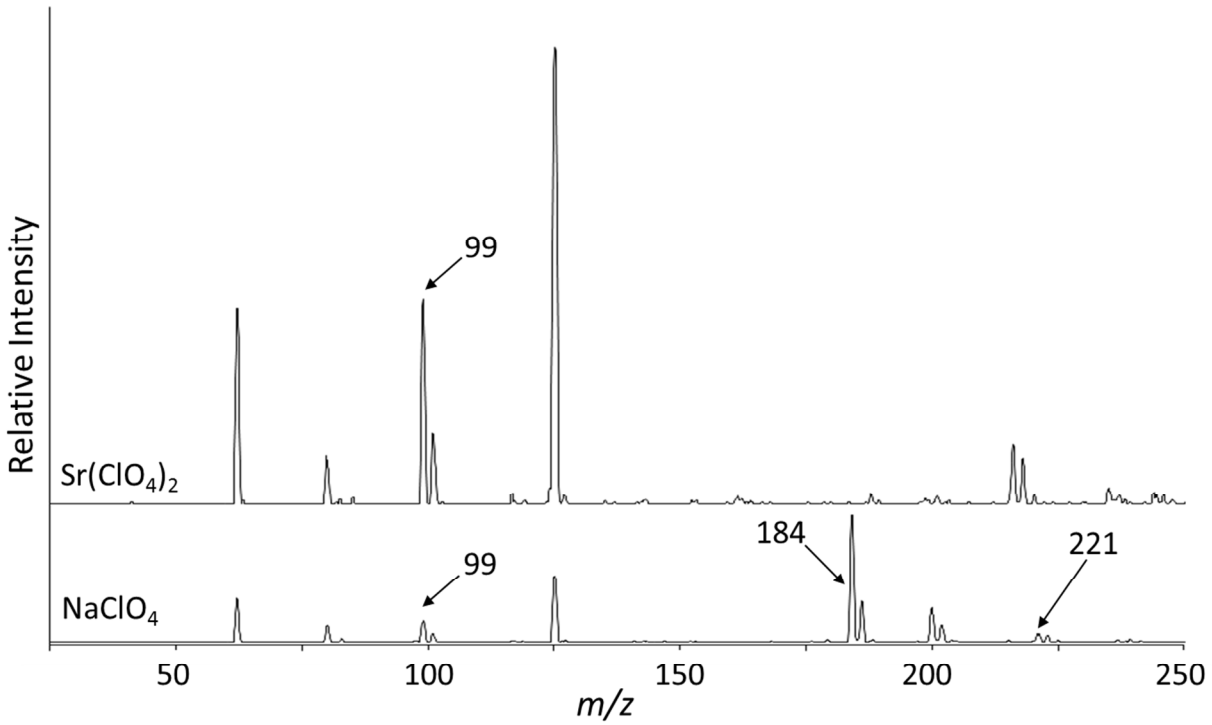

Figure S2 *represents the mass spectra from the thermal desorption of 2 perchlorate compounds, $NaClO_4$ and $Sr(ClO_4)_2$. Both demonstrate the formation of the perchlorate ion at m/z 99. The $NaClO_4$ also forms adducts with the nitrate and perchlorate ions at m/z of 184 and 221 respectively.*

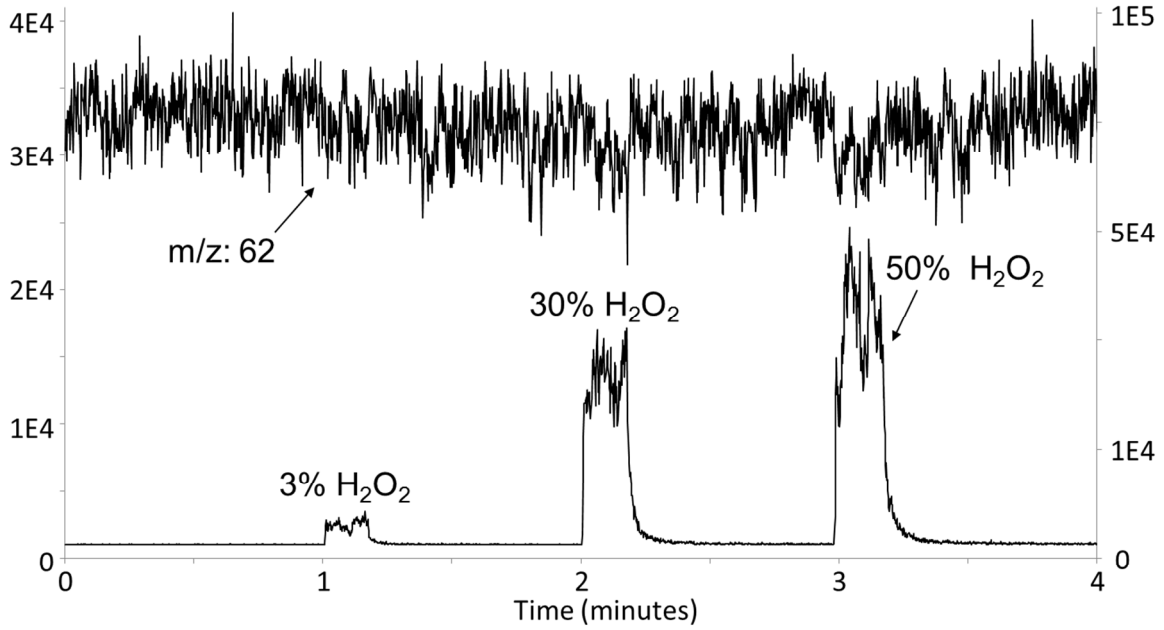

Figure S3 *is a plot of the nitrate reactant ions with the y-axis on the right (higher intensity) and the hydrogen peroxide – nitrate ion cluster with the y-axis on the left (lower intensity). A vial containing 3, 30, and 50% hydrogen peroxide was brought to the inlet of the AFT at 1, 2, and 3 min. respectively and remained there for 15 seconds. The graph demonstrates how the signal fluctuations scale with the signal intensity.*

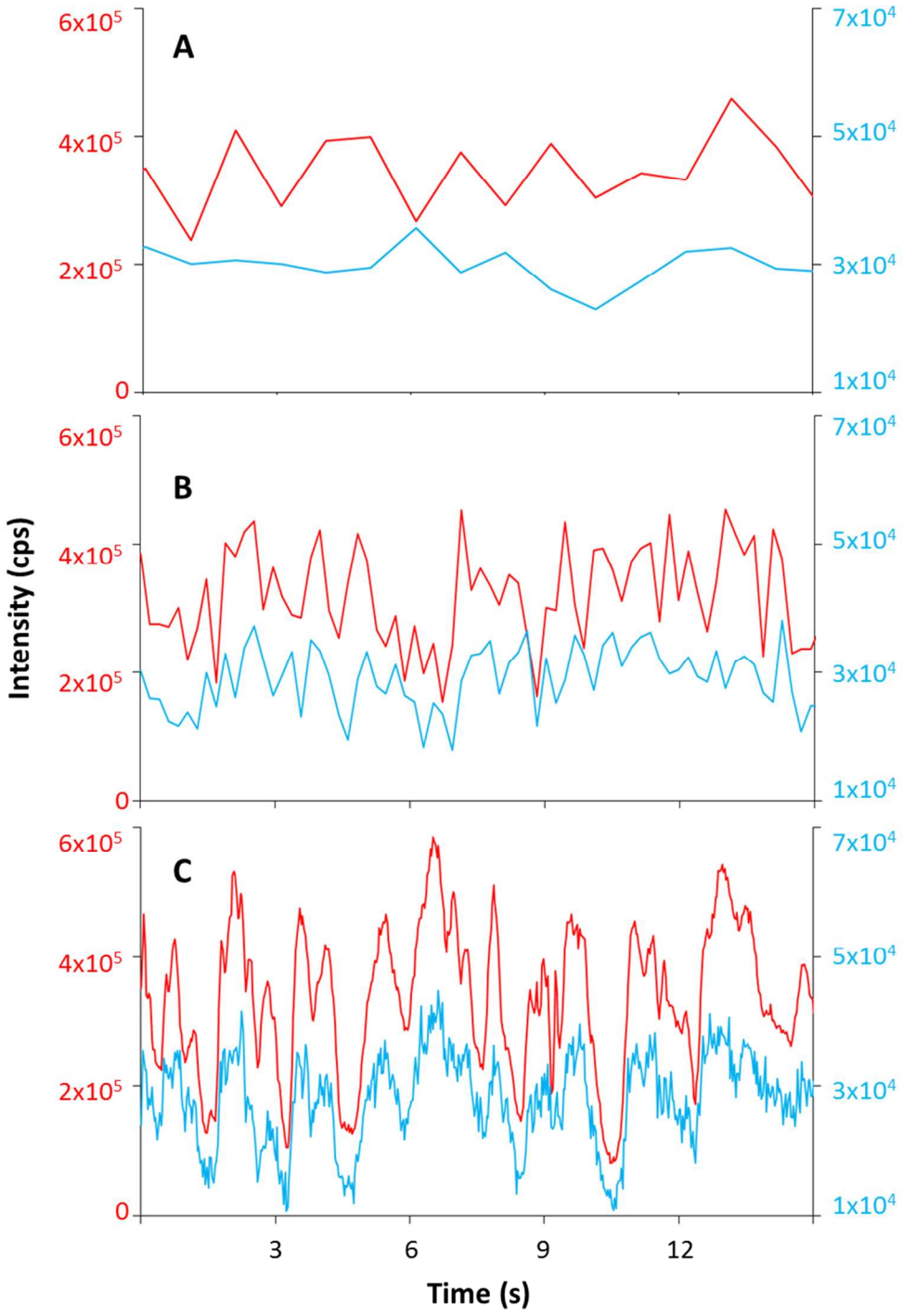

Figure S4 *is a plot of the nitrate ion at m/z 62 with the y-axis on the right (lower intensity) and the nitrate-nitric acid adduct ion at m/z 125 with the y-axis on the left (higher intensity). Figure S2 A is from selected ion monitoring (SIM) with a 500 ms dwell time, S2 B is from SIM with a 100 ms dwell time and S2 C is from SIM with a 10 ms dwell time. The figure demonstrates how the signal fluctuations between the 2 ions match with using short dwell times.*