SIMULTANEOUS DETECTION OF HOMEMADE EXPLOSIVES BY ELECTROSPRAY-MASS SPECTROMETRY. Chloé de Perre, Adelheid Prado, Bruce McCord, Department of Chemistry and Biochemistry, Florida International University, 11200 SW 8th Street, Miami, FL 33199, United States

Urea nitrate (UN) and ammonium nitrate (AN) are fertilizer-based homemade explosives that can have highly destructive effects. Because they are in the form of salts, their low volatility makes them difficult to detect at trace levels. These salts are also readily decomposable into urea, ammonium and nitrate, which are ubiquitous ions not characteristic of explosives. In this study, a procedure was developed to permit the detection of UN and AN simultaneously by positive ion electrospray ionization - mass spectrometry following the addition of 18-crown-6. The method was shown to be very sensitive (detection limits $\leq$ 2 µM or 0.15-0.25 ppm) and selective. In certain specific conditions, urea could be differentiated from uronium (protonated urea as in UN) and a mixture of urea and AN did not interfere with the UN signal. Some commercial high explosives could also be detected with the same procedure by switching to the negative ionization mode.