

DRUGS, EXPLOSIVES, AND FIRES: RESEARCHING FORENSIC CHEMISTRY MEASUREMENT CHALLENGES



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In the world of forensic chemistry, the need to rapidly and reliably detect and identify compounds of interest is becoming increasingly complex and challenging due to the increase of opioids, novel psychoactive substances (NPSs), and homemade explosives (HMEs). NIST has developed a forensic chemistry research program that helps practitioners by addressing measurement challenges and gaps in the areas of seized drug, explosive, and fire debris analysis.

Seized drug analysis is one area where new analytical challenges are constantly evolving. The detection of novel opioids is a focus area, where the utilization of new tools such as direct analysis in real time mass spectrometry (DART-MS), lateral flow immunoassays (LFIs), and microfluidics is being explored alongside quantifying opioids in operational backgrounds, measuring trace drug residue stability, and developing of strategies for detecting and reporting opioids using gas chromatography-mass spectrometry (GC-MS).

Explosives analysis presents a number of challenges from a screening aspect. Ongoing efforts are focusing on ambient ionization mass spectrometry modifications to achieve desorption temperatures necessary for inorganic analyses and strategies for the simultaneous analysis of peroxide and inorganic compounds. A final project is a merger of statistics and chemistry to develop a unified platform for method optimization for fire debris analysis. Perspectives on the need for increased communication between researchers and practitioners will also be presented.

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12:30 PM

CLARK 104

Dr. Sisco will be available to meet with small groups of students following the seminar.

Contact Bill Feeney
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if you are interested.

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