

## Headspace Solid – Phase Micro Extraction (HS-SPME) Analysis of Forensic Samples

The U.S. Customs and Border Protection (CBP) Laboratories and Scientific Services Directorate (LSSD) is seeking to host one or more National Science Foundation (NSF) student scientists with backgrounds in Chemistry or a related discipline to collaborate with LSSD analysts and scientists. LSSD provides forensic and scientific analysis in the areas of trade enforcement, weapons of mass destruction, intellectual property, import safety, and narcotics enforcement. CBP's Canine Program trains and employs canines for terrorist and controlled substances detection and apprehension, as well as other contraband used to finance terrorist and/or criminal drug trafficking organizations.

- **Project Duration:** TBD
- **Start Date:** Spring, summer or fall 2018
- **Location:** LSSD, Springfield, Virginia

### Project Overview

The objective of this project is to develop and optimize a new method using Headspace Solid – Phase Micro Extraction (HS-SPME) to determine the scent identity, efficiency, and decay of the training aids. HS-SPME has been used as an analytical technique to capture and effectively identify volatile components contributing to the scent profile and has successfully analyzed various plants, food substances, and flavors. This project may include, but is not limited to, the following tasks.

- Researching and developing new methods of scent deployment and recognition by canines to improve the Canine Program's training methods and analyzing these training aids for their scent efficiency.
- Develop a new method using HS-SPME GCMS to determine the scent identity, efficiency, and decay of substances.
- Identify scent profiles of various forensic substances.
- Participate in lab activities not limited to seminar, webinars, and tours of other laboratories in the local area.
- Present Findings to LSSD staff and complete a paper documenting findings.

### Qualifications

The ideal candidate will have GC-MS experience and a strong interest in forensic chemistry. The candidate shall be detail-oriented, possess excellent organizational, presentation, and written skills, and be able to perform tasks independently with little supervision

### Eligibility Requirements

- Citizenship: U.S. Citizen Only
- Degree: Chemistry
- Discipline(s): Analytical Chemistry

### Contact

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