



MAEGLIN

MOLECULAR ANALYZER FOR EFFICIENT GAS-PHASE LOW-POWER INTERROGATION

INTELLIGENCE VALUE

The MAEGLIN program aims to develop an ultra-low power chemical analysis system for remote, unattended detection of chemicals in order to provide the Intelligence Community with capabilities in persistent environmental monitoring to detect emissions that indicate illicit activity such as manufacturing of weapons, narcotics, toxins and pollutants, explosives, or nuclear materials.

The MAEGLIN program is developing sensors to detect harmful gaseous chemicals. The program intends to create a capability which can definitively identify chemicals with an atomic mass less than 500 amu (atomic mass units); small size (1.5 L or 0.5 L); and small weight (7 kg or 1.5 kg) with autonomous operation for extended time periods (2 years or 6 months).

In phase I, the MAEGLIN program developed component technology for chemical collection, separation, and identification. In phase II, MAEGLIN is developing an integrated capability that meets the goals of the program: high sensitivity, high specificity, very low power consumption, and ability to

identify chemicals in complex mixtures with high concentration of interferents. There are two research tracks in the MAEGLIN program:

- Forensic Identification Track: ability to collect a moderately complex chemical mixture and perform a full analysis of it with positive identification of a broad range of target species, including “true unknowns” that are not found in the system’s library
- Screening Identification Track: ability to collect a moderately complex chemical mixture and provide an automated identification of the presence of a target compound found in the system’s library

The MAEGLIN program is constantly evolving. In light of the COVID-19 pandemic, one research team shifted focus and adapted their system for breath analysis of ventilated patients. Another team collaborated with the Air Force to participate in decontamination flight tests and produced results in near real time.



Photograph of the ACHILLES chemical sensor developed by SRI International during decontamination flight testing on a C-130J Air Force cargo plane.

PRIME PERFORMERS

- University of Michigan (two teams)
- SRI International

TESTING AND EVALUATION PARTNERS

- U.S. Naval Research Laboratory
- Sandia National Laboratory
- Army Futures Command Combat Capabilities Development Command Chemical Biological Center

KEYWORDS

- Trace chemical detection
- Gas sampling
- Chemical identification
- Autonomous sensing
- Remote sensing
- CBRNE
- Gas chromatography
- Mass spectrometry



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