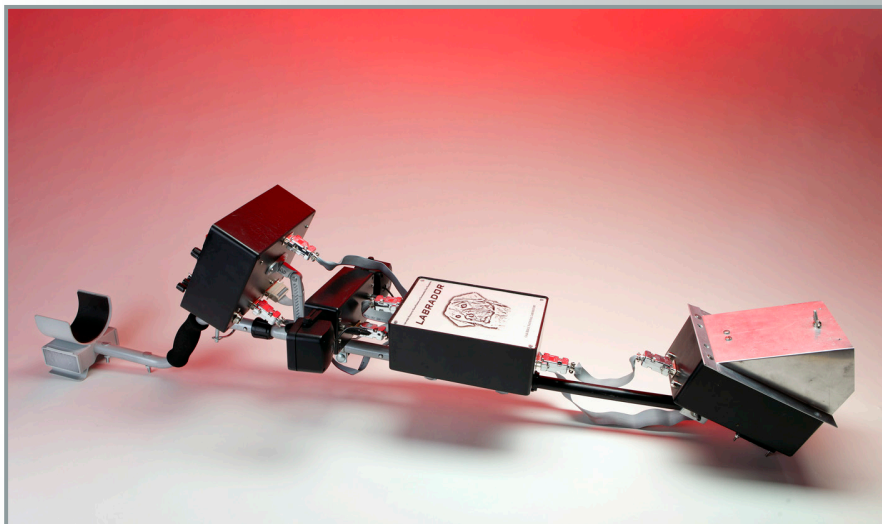


Hand-Held Analyzer Quickly Detects Buried Human Remains

UT-B ID 200902305



Technology Summary

A lightweight hand-held analyzer invented by ORNL researchers uses visual and auditory cues to quickly alert investigators to the presence of buried human remains. The Lightweight Analyzer for Buried Remains And Decomposition Odor Recognition (LABRADOR) is a significant step forward in the field of forensic chemistry for clandestine grave detection.

Traditional detection using canines and ground-penetrating radar is often slow and unreliable. LABRADOR improves the ability to distinguish human decomposition from other chemical vapors in the atmosphere. Essentially, it works as an electronic sniffing tool. The human body releases more than 400 chemicals as it decomposes. Organic compounds, amino acids, inorganic constituents, and noxious gases are released at specific times and in specific ratios, leaving a chemical signature that uniquely characterizes the state of decomposition.

LABRADOR uses an array of heated metal oxide sensors to detect the major classes of volatile chemicals present during decomposition. The sensors are modulated with a unique audio frequency. LABRADOR's audio frequency tones are combined electronically into a composite audio signal that is output to both an audio amplifier and the audio input of a computer sound card. The computer sound card is used to digitize and store the data, and a Fast Fourier Transform software program deciphers the composite audio stream into the signal responses for each sensor. Bar graphs on the front panel of the LABRADOR provide a quick visual response to each sensor.

Advantages

- Self-contained, portable, and field usable
- Detects the specific chemicals identified in the database
- Provides visual and auditory cues
- Takes the guesswork out of current field methods that use canines and radar
- Identifies the unique chemical signature associated with decomposition

Potential Applications

- Law enforcement
- Military
- Intelligence operations
- Anthropology and archeology

Patent

Arpad A. Vass and Marcus B. Wise, *Light Weight Analyzer for Odor Recognition*, U.S. Patent Application 12/848,118, filed July 31, 2010.

Lead Inventors

Arpad A. Vass¹ and Marcus B. Wise²
¹Biosciences Division
²Chemical Sciences Division
Oak Ridge National Laboratory

Licensing Contact

Renae Speck
Technology Commercialization Manager,
Biological and Environmental Sciences
UT-Battelle, LLC
Oak Ridge National Laboratory
Office Phone: 865.576.4680
E-mail: speckrr@ornl.gov

 PARTNERSHIPS