

MULTI-COLOR CAVITY RING-DOWN SPECTROMETER

MULTI-COLOR, OPTICAL SPECTROMETER FOR DETECTING EXPLOSIVE, HAZARDOUS, AND DRUG MATERIALS, AS WELL AS VOLATILE ORGANIC COMPOUNDS

Key Features:	<ul style="list-style-type: none"> ➤ Simultaneous detection of multiple species of gas molecules, such as: <ul style="list-style-type: none"> - Compounds common in explosives (e.g. TNT based, RDX based, and TATP based explosives) - Illicit drugs - Hazardous materials - Patient's breath, skin, or bodily fluid ➤ Higher selectivity and specificity ➤ Lower Limit-of-Detection (e.g. LOD of ammonia <2 ppb at the 99.97% confidence level)
Applications:	<ul style="list-style-type: none"> ➤ Military, defense, and law enforcement sectors ➤ Medical diagnostics and screening (e.g. diabetes, breast cancer) ➤ Environmental science (e.g. soil, water, and ambient air contamination)
Project Summary:	<p>Arkansas State University is developing and seeking collaborators and/or licensees for further development of a multi-color cavity ring-down laser absorption spectrometer (CRDS) and detection method.</p> <p>The spectrometer performs real time measurements and detection of multiple species of compounds in less than 5 seconds. The device detects compounds transported through its enclosure, even compounds carried by human breath or emanating from human skin.</p> <p>The present technology efficiently solves several challenges and limitations of pre-existing CRD methods and existing laser instruments. The multi-color optical spectrometer provides a greater level of selectivity and real time capability by allowing simultaneous measurements of multiple wavelengths. In one example, the LOD of ammonia (NH₃) was demonstrated to be less than 2 ppb by volume at the 99.97% confidence level.</p>
Potential Markets Overview:	<ul style="list-style-type: none"> ➤ The global market for environmental sensing and monitoring technologies was worth \$9.1 billion in 2008 and is expected to reach \$13 billion in 2014 (<i>Sensors 2009, Volume 9, Issue 12, pp. 10447-10512</i>). ➤ The personalized medical diagnostics global market is expected to be more than US\$ 30 Billion by 2018. Diabetes management tests and cancer management tests are the leading markets in this segment (<i>Renub Research</i>).
Patent Status:	Patented.
Commercialization Status:	Proof of concept achieved. Seeking collaborators or licensees for further development.