MICRO-PYROLIZER FOR RAPID BIO-IDENTIFICATION

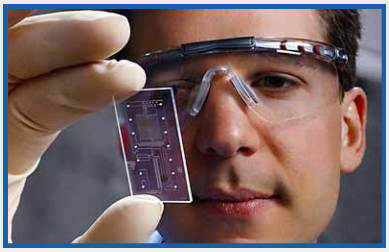
TECHNOLOGY READINESS LEVEL: 4

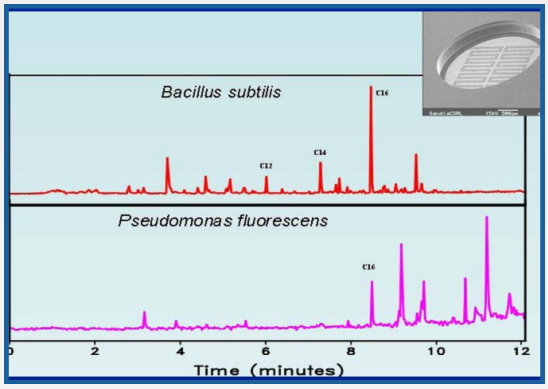
PROOF OF CONCEPT HAS BEEN DEMONSTRATED AND THE TECHNOLOGY IS READY FOR APPLICATION-SPECIFIC DEVELOPMENT.

US PATENT # 7,078,237

TECHNOLOGY SUMMARY

Sandia has developed a micro-fabricated device for identifying different organisms by their unique chemical "fingerprint" based on fatty acid (lipid) content. Applications can include food composition testing (testing the purity of Extra Virgin Olive Oil), microbe analysis (e.g. Anthrax and virulent bacteria), high value/specialty crop verification (designer seeds, bio-fuels), and unknown substance testing.





Traditional methods for isolating fatty acids for are time-consuming and use large volumes of organic solvents. However, Sandia's micro-pyrolizer quickly turns fatty acids into volatile esters for separation and measurement in a gas chromatograph (GC) or ion mobility spectrometer (IMS). The resulting pattern of relative amounts of fatty acids can identify particular species.

This technology has been shown to be effective in distinguishing bacteria at the gram-type, genera, and sometimes species levels. The chart above shows the fatty acid content of two bacteria measured by Sandia's rapid-pryolysis technology.

POTENTIAL APPLICATIONS

- Agribusiness: Crop Testing & Verification
- Bio-fuels: Plants/Algae Lipid Content
- Homeland & International Security: Bio-Agent Identification
- Medical: Pathogen Diagnosis
- Food Products

TECHNOLOGICAL BENEFITS

- Suitable for low-cost mass production
- Rapid, on-site identification of bio samples
- Requires tiny sample volumes
- Integrates with lab-on-a-chip style micro-GC

TECHNOLOGY INQUIRY?

For more information or licensing opportunities contact us at

ip@sandia.gov

Refer to SD # 6790

or visit

https://ip.sandia.gov

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SAND # 2010-5837P