

Biomedical Sensors

Leveraging our world-renowned expertise and facilities in microfabrication and systems engineering, we have been at the forefront of developing autonomous, integrated devices for national security applications. Many of these technologies and inventions are dual-use and can provide unique solutions to meet nation's healthcare challenges such as providing rapid, point-of-care diagnostic assays and devices.



SpinDx™: A Portable, Multiplexed Immunoassay Platform

Researchers have developed an innovative platform for conducting simultaneous multiplexed immunoassays from a single finger stick of whole blood with < 15 minute total sample-to-answer time. The technique is based on sedimentation principles within a disposable microfluidic disk, in which all sample processing and detection is automated by centrifugal force. (TRL 6)



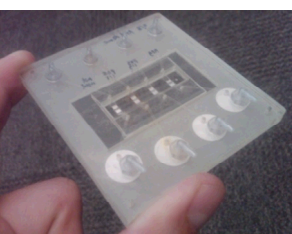
Automated Molecular Biology

Sandia's AMBis a droplet-handling router that enables the interconnection of diverse processing and analysis modules to automate complex microliter-scale molecular biology sample-preparation protocols. Applications include processing of clinical samples for NA amplification, formatting and library preparation prior to next-generation sequencing. (TRL 5)



Acoustic Wave Biosensor for Rapid Point-of-care Medical Diagnosis

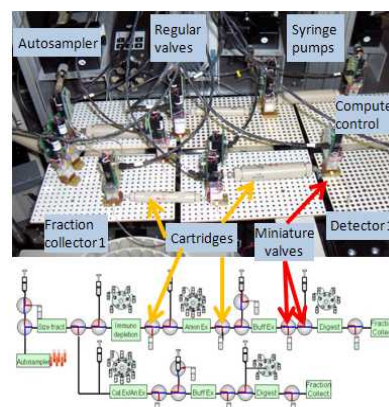
A handheld detection system capable of multiplex identification of a wide range of medically relevant pathogens and their biomolecular signatures at clinically relevant levels. Detection can occur within minutes at the point of care. (TRL 4)



Pocket Lab™: Multiplexed Immunoassays

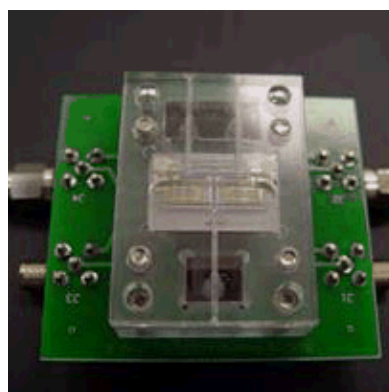
Rapid, portable sample processing and multiplexed analysis in a miniaturized electrokinetic device. Detects trace levels of proteins and <20 bacteria per mL of whole blood in <20 minutes. (TRL 4)

*Exceptional service
in the national interest*



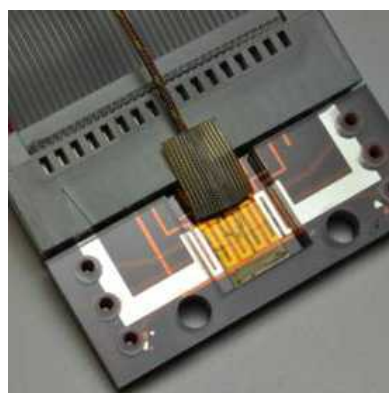
Modular Automated Processing System (MAPS)

MAPS enables in-line multidimensional processing of small volumes of complex biological samples (e.g., serum). Readily customized to specific samples and applications, the automated system enables on-the-fly adjustment of processing flows to maximize proteome coverage for targeted proteomics, biomarker discovery, and characterization of clinical samples. (TRL 4)



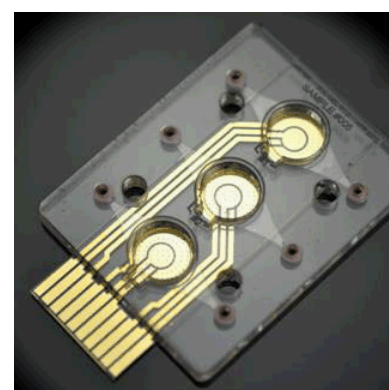
Acoustic Wave Sample Preparation

Our miniature acoustic lysing system provides front-end sample preparation for environmental bio sensing and medical diagnostics by rapidly and efficiently releasing nucleic acids and proteins from cellular samples. When compared to commercial lysing instruments, our "ultrasonic bath on-a-chip" technology provides higher efficiency, takes less time, consumes less power, and occupies a much smaller footprint. (TRL 3)



Electrochemical Arrays

Electrochemical sensors allow for multianalyte detection and substantially increase confidence in the sensor output. These microsensor arrays are highly multiplexed to detect both chemical and biological agents including DNA, proteins, bacteria and viruses. (TRL 3)



Cell-Based Biosensors

Molecular biology and genomic-scale technologies are being used to create sensor arrays that utilize living cells as active sensing elements. We are generating cell lines that uniquely fluoresce in response to a variety of target agents, which can be patterned onto a variety of substrates. (TRL 3)

Sandia conducts research and development to support US industry and government needs. Various business arrangements are possible including licensing of technology, contract R&D, joint R&D for government sponsors, and R&D through cooperative research and development agreements (CRADA). Sandia may also provide fabrication services in limited amounts when it has unique capabilities.

Sandia Point of Contact: Alyssa Christy (ajchris@sandia.gov)