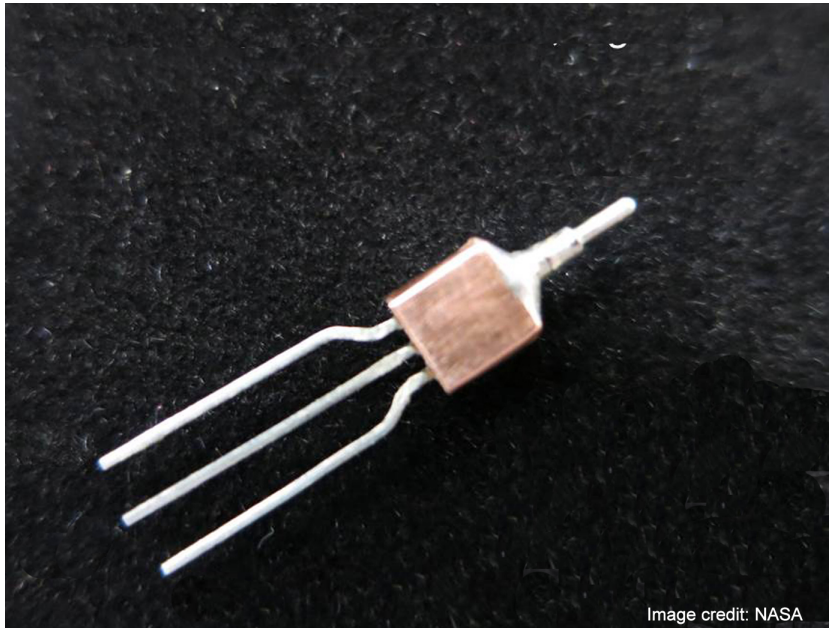




TECHNOLOGY SOLUTION

Sensors



Solid State Sensor for Detection and Characterization of Electric Fields

Non-contact method for measurement of the true electric field
revealing properties and characteristics of materials and plasmas

NASA's Langley Research Center has developed a new solid state integrated circuit based on field effect transistor (FET). Called ergFET, the sensor characterizes the electronic properties of materials, allowing for detection of items like baggage, wiring, liquids, and can even be used for medical imaging such as remote EKG.

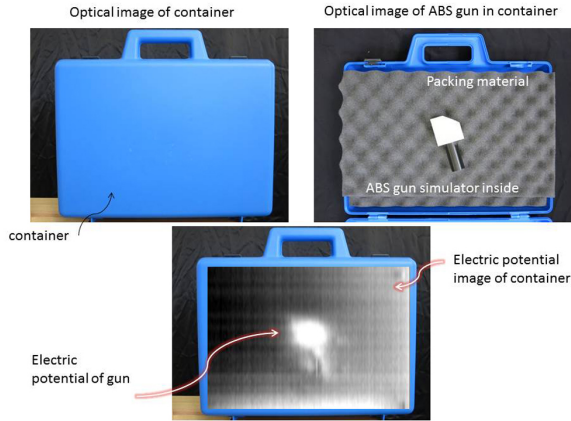
BENEFITS

- High sensitivity
- Improved resolution
- Portability
- Improved robustness
- Solid state, no moving parts



THE TECHNOLOGY

This equilibrium-reversing-gate field effect transistor (ergFET) deploys an electrode near the gate of the transistor to control and reverse leakage currents which are typical in transistors and can lead to measurement errors. It can be built into an array to enable higher resolution imaging and is a solid state device free of moving parts. This enables portable and hand held sensor designs.



Detection of All Plastic Gun Hidden in Luggage. Image credit: NASA Langley

APPLICATIONS

The technology has several potential applications:

- Security screening
- Medical imaging
- Non-destructive testing
- Intrusion detection
- Forensics
- Combustion science
- Sensor design
- Electrostatic discharge (ESD) mitigation

PUBLICATIONS

Patent No: 10,024,900

Generazio, E. R: Electric Potential and Electric Field Imaging with Applications, Materials Evaluation, Volume 73, Issue 11, November 1, 2015, pp 1479-1489

technology.nasa.gov

More Information

National Aeronautics and Space Administration

Agency Licensing Concierge

Langley Research Center

Mail Stop 020
Hampton, VA 23681
202-358-7432

Agency-Patent-Licensing@mail.nasa.gov

www.nasa.gov

NP-2016-09-2214-HQ

NASA's Technology Transfer Program pursues the widest possible applications of agency technology to benefit US citizens. Through partnerships and licensing agreements with industry, the program ensures that NASA's investments in pioneering research find secondary uses that benefit the economy, create jobs, and improve quality of life.

LAR-18484-1, LAR-TOPS-235