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Compositions and Methods for Interrogating Containers for Special Nuclear Materials

A compact, portable detection system uses tensioned metastable fluid sensors for accurate, real-time screening of special nuclear materials in cargo, suitable for airport, marine, and defense applications.

Researchers at Purdue University have developed a new approach to discrete detection of detect special nuclear materials (SNM). The technique uses tensioned metastable fluid (TMFD) sensors as well as external probes to interrogate cargo with sensitivity to both cargo type and SNM type. The apparatus can measure temperature as well as negative pressure tensioned fluid states through threshold energy neutron analysis (TENA) in real-time. The device helps to avoid tritium buildup for hydrogenous materials and can also distinguish between metallic materials. In testing, the technique can accurately find SNM with a confidence of ninety-five percent.

Advantages:

-Discrete

-Accurate

-Compact

-Portable

-Dynamic real-time detection

Potential Applications:

-Airport settings

-Marine port settings

-Military/defense

TRL: 2

Intellectual Property:

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Category

Aerospace & Defense/Defense Electronics & Surveillance Technologies

Materials Science & Nanotechnology/Materials Testing & Characterization Tools

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