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Patent Number(s): US2012191371-A1

Title: Method for detecting chemical in rough surface lactose target, involves transforming terahertz frequency spectrum in frequency domain using wavelet transform to generate corresponding wavelet coefficient

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Abstract: NOVELTY - The method involves obtaining a terahertz frequency spectrum characterizing the interaction of a pulsed terahertz beam with the target, using reflection spectroscopy. The terahertz frequency spectrum in the frequency domain is transformed using a wavelet transform to generate a corresponding wavelet coefficient. The wavelet coefficient is analyzed to detect the presence of a selected chemical. Several time domain signals are obtained from different locations on the target.

USE - Method for detecting chemical in rough surface lactose target for applications of stand-off detection.

ADVANTAGE - The electromagnetic scattering of terahertz waves caused by the surface roughness of the target can significantly reduce the signal-to-noise ratio in the detected absorption spectrum so that the ability to use the detected spectrum to identify particular chemical compositions in or on the target is inhibited.

DESCRIPTION OF DRAWING(S) - The drawing shows a flowchart illustrating the process of detecting chemical in target.

Step for obtaining terahertz time domain spectroscopy data of target (102)

Step for transforming the data to frequency space (104)

Step for conditioning the data in frequency space (106)

Step for transforming the transformed and conditioned data into wavelet frequency space (108)

Step for detecting spectroscopic property of chemical in the target (110)

Derwent Class Code(s): S03 (Scientific Instrumentation, photometry, calorimetry); T01 (Digital Computers)

Derwent Manual Code(s): S03-E05; T01-J04B1

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