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Title: Non-imaging dispersive spectrometer system for identifying gases and solids has terahertz (THz) detectors each including thermoelectric micro electro mechanical system (MEMS) microbridge sensor and micro antenna connected to sensor

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Abstract: NOVELTY - The non-imaging dispersive spectrometer system (10) has a THz radiation source (72) for illuminating a target (71), a slit aperture (27,37) and fore-optics (26,36) to focus incident radiation reflected or emanated from the target to the slit aperture. A secondary optics (28,38) collimates the radiation from the slit aperture to a dispersive element (24,34). The THz detectors in an optical path from the dispersive element, each include a thermoelectric MEMS microbridge sensor and a micro antenna connected to the sensor.

USE - Non-imaging dispersive spectrometer system used in THz spectroscopy for identifying rotational bands and rotation-vibrational bands gases and solids of lattice vibrations.

ADVANTAGE - Permits to achieve very high sensitivity without requiring cooling, while providing very significant amount of thermal isolation between the collection of the radiation (via the micro antenna) and the detection of the radiation (via the microstructure). Provides information for detecting a material of the target by the detector signals indicating the impingement of THz radiation.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for a non-imaging spectroscopic method.

DESCRIPTION OF DRAWING(S) - The drawing shows the block diagram of an overall layout of the spectrometer system.

Non-imaging dispersive spectrometer system (10)

Dispersive elements (24,34)

Fore-optics (26,36)

Slit aperture (27,37)

Secondary optics (28,38)

Target (71)

THz radiation source (72)

Derwent Class Code(s): S03 (Scientific Instrumentation, photometry, calorimetry); U14 (Memories, Film and Hybrid Circuits, Digital memories)

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