

LICENSING OPPORTUNITY: A LIGHT-BASED TESTING SYSTEM FOR DETECTING CHEMICALS AND MATERIALS

DESCRIPTION

Problem

Traditional spectroscopy methods often suffer from slow data collection, low resolution, and measurement inaccuracies. Many existing systems require complex calibration and bulky equipment, limiting their usability. This invention addresses these issues by providing a fast, precise, and automated solution. It eliminates the need for moving parts, reducing maintenance and operational costs. As a result, researchers and industries can obtain high-quality spectral data with minimal effort.

Invention

This invention introduces a dual comb spectroscopy system that enhances optical measurement accuracy. It uses two optical frequency combs to analyze light absorption and emission with high precision. The system improves data collection speed and reduces errors in spectral analysis. It is designed to be compact and efficient, making it suitable for various scientific and industrial applications. The technology is particularly useful for chemical analysis, environmental monitoring, and medical diagnostics.

BENEFITS

Potential Commercial Applications

This technology can be applied in pharmaceuticals for drug analysis, environmental science for air quality monitoring, and biomedical research for disease detection. It is valuable in industrial quality control, ensuring material consistency in manufacturing. The system can also be used in defense and security for detecting hazardous substances. Additionally, it has potential in astronomy for studying celestial compositions.

Competitive Advantage

- **Lower Operational Costs:** The system's compact design and fewer moving parts reduce maintenance and calibration expenses.
- **Faster Data Processing:** Speeding up spectroscopy analysis can improve efficiency, leading to reduced labor and operational overhead.
- **Increased Accuracy, Less Waste:** Higher precision means fewer errors in chemical detection, reducing material waste and costly reprocessing in industries like pharmaceuticals and manufacturing.
- **Competitive Pricing for Commercial Adoption:** The system can be produced at a lower cost compared to traditional spectroscopy tools, making it more accessible to a broader market.
- **Versatility for Multiple Industries:** Its adaptable use across environmental monitoring, pharmaceuticals, defense, and manufacturing enhances revenue potential across diverse sectors.

Contact: licensing@nist.gov

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OFFICE

NIST Technology Partnerships Office
National Institute of Standards and Technology
100 Bureau Drive, Gaithersburg, MD 20899-2200