LICENSING OPPORTUNITY: BROADBAND LIGHT SENSOR WITH OPTICAL READOUT

DESCRIPTION

Problem

Traditional thermal detectors struggle to work with very high temperatures and can only detect a narrow range of light. They also rely on materials that don't mix well with the high heat that is consistent with modern chip-making processes.

Invention

This invention is a new type of light detector called a photonic bolometer. It uses high-heat-resistant carbon nanotubes that can absorb nearly all light and convert it into heat, which is then measured using a special photonic temperature sensor that detects changes in temperature by tracking shifts in light frequency. This setup allows the device to detect a wide range of light wavelengths, from ultraviolet to far-infrared, enabling better thermal imaging across a broader spectrum. Plus, it's built on a chip, making it compact and easy to integrate into other technologies.

BENEFITS

Potential Commercial Applications

1. Advanced thermal cameras for security, firefighting, and industrial inspections.
2. Space exploration, where detecting heat and light across a wide spectrum is critical.
3. Medical imaging devices could benefit from its high sensitivity and compact design.
4. Consumer electronics, such as smartphones and wearables, could utilize it for environmental sensing.
5. Smart home systems for energy monitoring and safety.

Competitive Advantage

1. Cost-Efficient Manufacturing: Utilizes standard semiconductor processes and no exotic materials, reducing production complexity and lowering unit costs.
2. No Cooling Required: Operates without cryogenic cooling, cutting power consumption and system costs by up to 30%.
3. Compact & Lightweight: Small footprint ideal for space-constrained applications, lowering fuel, packaging, and design costs in industries like aerospace and wearables.
4. Multi-Use Versatility: Broad-spectrum sensitivity allows one sensor to replace several, simplifying design and reducing inventory and sourcing overhead.
5. High Performance, Low Overhead: Delivers fast, sensitive results with minimal processing, perfect for cost-sensitive consumer and industrial products.

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