SURFACE SENSITIZATION FOR HIGH-RESOLUTION THERMAL IMAGING

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PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Published Application	20230324228	10/12/2023	2021-002

BRIEF DESCRIPTION

This invention is a structured product comprising at least two layers comprising a first layer and a second layer. The first layer comprises at least one material having a temperature-dependent (e.g., a positive temperature-dependent or negative temperature-dependent) wavelength-integrated emissivity (ε); the second layer comprises at least one reflective material that is reflective to light in an IR spectrum, for example, in an 8-14 μm wavelength range; and the structured product has a positive temperature dependent wavelength-integrated emissivity.

SUGGESTED USES

Thermography plays a key role in diverse commercial and industrial applications, such as night vision, security surveillance, and electronics inspection to medical diagnostics, structural defect screening, and academic research. In all these applications, a higher temperature sensitivity is actively pursued in order to achieve better performance as well as to empower new applications, for example, early cancer diagnostics and single-cell thermography. The present invention increases this temperature sensitivity.

ADVANTAGES

This invention improve the temperature sensitivities of IR cameras, disclosed herein is a method of covering the target object with a material whose has an unusual, strong, and positive T-dependence. Since increases with temperature, according to Eq. will be drastically amplified. In this way, for an IR camera with a temperature sensitivity when it is used together with our invention, the new temperature sensitivity will be improved. Furthermore, it can be pre-determined, the target object temperature (T) can be back-calculated based on the IR camera readouts and the amplifying factor of the coating material. Hence, using this method, the temperature sensitivities of all IR cameras can be greatly improved (by a factor over 10) without any modifications on the IR cameras themselves.

RELATED MATERIALS

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Scalable Temperature Adaptive Radiative Coating With Optimized Solar Absorption
- Materials Platform for Flexible Emissivity Engineering

CONTACT

Craig K. Kennedy
craig.kennedy@berkeley.edu
tel: .

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INVENTORS

» Wu, JunQiao

OTHER INFORMATION

KEYWORDS

Thermal imaging

CATEGORIZED AS

» **Materials & Chemicals**

» Thin Films

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