DUST REPELLENT SURFACES

Tech ID: 34307 / UC Case 2025-072-0

PATENT STATUS

Patent Pending

BRIEF DESCRIPTION

Dust accumulation on solar panels, particularly in desert regions, can cause significant power losses without frequent water-based cleaning. With the global solar capacity rising, current cleaning methods yield high operational costs, consume billions of gallons of water annually, and pose sustainability and resource challenges.

To overcome these challenges, UC Berkeley researchers have developed a passive anti-soiling coating, which can effectively repel dust particles without energy or resources. The anti-soiling performance can be triggered by an onset temperature as low as 40 °C—common in most operating environments—and has been demonstrated to repel nearly all dust particles in preliminary studies. The approach is practical and highly promising for large-scale deployment.

SUGGESTED USES

» Anti-soiling, in particular mitigating dust accumulation on solar panels and other optical surfaces

ADVANTAGES

» Passive, efficient operation; increased solar panel power generation

» Tunable: onset temperature and target particle size

RELATED MATERIALS

CONTACT

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INVENTORS

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OTHER INFORMATION

CATEGORIZED AS

» **Optics and Photonics**

» All Optics and Photonics

» **Energy**

» Solar

» **Engineering**

» Engineering

» **Materials & Chemicals**

» Nanomaterials

» Thin Films

» **Sensors & Instrumentation**

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ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

▶ Droplet Hotspot Cooling Due To Thermotaxis