Sandia National Laboratories

Solar Selective Absorption Coatings

Summary

Sandia has developed a new class of solar selective absorber coatings that significantly improve the thermal conversion efficiency of solar units by reducing radiative energy losses from the absorbing elements. Solar absorption coatings applied to components have considerable utility in the design of solar thermal flat-plan collectors and of solar concentrators.

Unlike other coatings that tend to be mechanically fragile which leads to degradation, the coating developed by Sandia is economical, energy efficient, and has limited environmental impact compared to competing processes. These coatings comprise a structured metallic overlayer that has a sub-micron structured designed to efficiently absorb solar radiation, while retaining low thermal emissivity for infrared thermal radiation.

BENEFITS

- Process is more economical than existing methods
- Has limited environmental impact compared to current processes
- More energy efficient
- Protected from mechanical, thermal, and environmental degradation
- Coatings are designed to efficiently absorb solar radiation while retaining low thermal emissivity

APPLICATIONS

- Solar thermal power plant
- Energy storage
- Photovoltaics

U.S. PATENTS ON SD# 5828

- 6632542
- 6783653

INTELLECTUAL PROPERTY & LICENSING CONTACT

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Licensing & Partnering Status:

Various license and partnering options are available. Please contact the Intellectual Property department to discuss.

Technology Readiness Level:

Sandia estimates this technology's TRL at level 4. Key elements of the technology have been demonstrated in a laboratory environment.

National Nuclear Security Administration

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