

Organic Crystallinecomposites as New Cryogenic Energy Materials

Tech ID: 33972 / UC Case 2024-545-0

ABSTRACT

Researchers at the University of California, Davis have developed a technology that introduces a class of organic compounds capable of releasing clean energy upon cooling to cryogenic temperatures.

FULL DESCRIPTION

This technology encompasses unique organic compounds that detonate at temperatures below ambient levels, releasing significant energy without chemical transformation. This phenomenon, observed through high-speed camera microscopy, suggests a non-crystalline material phase transition, offering a renewable and clean energy source. The compounds can be recrystallized for repeated use, presenting a novel approach to energy materials in cryogenic applications.

APPLICATIONS

- ▶ Space exploration technologies.
- ▶ Cryogenic energy storage and release systems.
- ▶ Renewable energy materials development.
- ▶ Advanced cryogenic research tools and methodologies.

FEATURES/BENEFITS

- ▶ Energy release at cryogenic temperatures without chemical transformation.
- ▶ Renewable - compounds can be recrystallized and reused.
- ▶ Clean energy release, with no alteration in molecular structure post-detonation.
- ▶ Potential applications in space technology and cryogenic energy materials.
- ▶ Addresses the lack of renewable energy sources operable at cryogenic temperatures.
- ▶ Meets the need for non-chemical transformation-based energy release mechanisms.
- ▶ Fulfills the requirement for mechanically responsive materials in cryogenic conditions.

PATENT STATUS

Patent Pending

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INVENTORS

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OTHER INFORMATION

KEYWORDS

clean energy, cold bomb, crystalline-amorphous composite, cryogenic energy materials, cryogenic temperature, energy materials, energy storage, high-speed microscopy, mechanical response, non-crystalline phase transition, organic composite materials, organic compounds, renewable, space

technology

CATEGORIZED AS

- ▶ **Energy**
 - ▶ Storage/Battery
- ▶ **Materials & Chemicals**
 - ▶ Chemicals
 - ▶ Nanomaterials
- ▶ **Nanotechnology**
 - ▶ Materials
- ▶ **Engineering**
 - ▶ Other

RELATED CASES

2024-545-0

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- ▶ Atomic Force Microscopy-based Platform for Investigating Single Cell Mechanics
- ▶ Generic Method for Controlled Assembly of Molecules
- ▶ A New Methodology for 3D Nanoprinting

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