Room-Temperature Manufacturing Of Low-Carbon Cement And Cementitious Materials

Tech ID: 33719 / UC Case 2025-757-0

BRIEF DESCRIPTION

A revolutionary low-CO2 cement produced at room temperature, offering a sustainable alternative to traditional Portland cement.

FULL DESCRIPTION

Researchers at UCI have developed a novel cement and its manufacturing process as a sustainable alternative to Portland cement, traditionally known for its high carbon footprint. Unlike conventional methods requiring temperatures above 1400 °C and resulting in significant CO2 emissions, this new approach manufactures cement at room temperature and enables concrete components with long-term CO2 sequestration capabilities and essential mechanical strength for structural uses.

SUGGESTED USES

- Construction of civil, energy, and defense structures requiring low-carbon concrete.
- Infrastructure projects seeking sustainable building materials.
- Industrial decarbonization efforts within the cement and concrete industry.
- Development of CO2 sequestering building components for environmental impact mitigation.
- Replacement for traditional Portland cement in any application demanding reduced environmental footprint.

ADVANTAGES

- Manufactured at room temperature, significantly reducing energy consumption and CO2 emissions.
- Electrifiable manufacturing process, allowing for a transition to renewable energy sources.
- Utilizes waste materials as raw inputs, further decreasing the carbon footprint.
- Enables CO2 sequestration throughout the product's lifespan, enhancing environmental benefits.
- Provides necessary mechanical strength and durability for construction and structural applications.

PATENT STATUS

Patent Pending

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OTHER INFORMATION

KEYWORDS

Cleantech, Carbon Capture, Concrete, Construction Materials, Green Manufacturing, Clean Manufacturing, Sustainable Materials

CATEGORIZED AS

- **Materials & Chemicals**
  - Composites
  - Other

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