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# Low Carbon, Low Cost Cement Mix For Additive Manufacturing (3D Concrete Printing)

Researchers at Purdue University have developed a low-cost, low-carbon cement mix for additive manufacturing. This cement mixture significantly increases static yield, improves cure kinetics, and reduces costs. Most conventional cement additive producers use Viscosity Modifying Admixture (VMA), which can have a prolonged setting time and reduced compressive strength. Moreover, the majority of 3D concrete printing (3DCP) mixes are proprietary and very expensive. The mixture developed at Purdue instead enables greater build heights and improves hardened properties, offering a sustainable solution for construction by lowering both environmental impact and manufacturing expenses.

## Technology Validation:

Rheology tests were performed on the cement mixture. Results demonstrated that the static yield stress of the cement paste increased by ~800%.

## Advantages:

- Reduces costs and carbon footprint
- Lowers manufacturing expenses
- Improving cure kinetics
- Improves yield at 1/20 the dosing of commercial VMA

## Applications:

- Construction materials
- Cementitious systems
- Additive manufacturing

**Technology ID**  
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**Category**  
Infrastructure &  
Construction/Construction  
Robotics & 3D Printing

**Authors**  
Jan Olek  
Yu Wang  
Jeffrey P Youngblood  
Pablo Zavattieri

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-3D printing

**TRL:** 3

**Intellectual Property:**

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**Keywords:** 3D concrete printing mix, Low-carbon cement additive, Sustainable construction materials, Additive manufacturing cement, High-yield cement formulation, Rheology-optimized cement, Fast-curing concrete mix, Cost-effective construction printing, Non-proprietary 3DCP solution, Green building materials