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Self-Cleaning Cementitious Materials with Lower Nano-TiO_2 and Reduced Carbon Footprint

CO_2-cured process halves nano-TiO_2 content while enhancing photocatalytic self-cleaning activity.

Researchers at Purdue University have developed a method to create self-cleaning cementitious materials and coatings with lower nano-TiO2 content and reduced carbon footprint caused by the production of these materials. This can be done by using carbon dioxide curing during the production process. Normally, over 4% of nano-TiO2 is required to provide cementitious composites with self-cleaning activity. However, with this new method, the researchers were able to obtain cementitious coatings with 2% of nano-TiO2. This process not only reduces the carbon footprint, but also increases the self-cleaning activity of the cementitious materials.

Advantages:

- Reduced carbon footprint

- Increased self-cleaning capabilities

- Reduced nano-titanium oxide content

Applications:

- Concrete construction

- Transportation infrastructure

Technology Validation:

This technology can be validated with research and testing done by the researchers which shows an improvement in self-cleaning capabilities with their new method of creating self-cleaning cementitious materials.

TRL: 4

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Category

Materials Science & Nanotechnology/Composites & Hybrid Materials

Chemicals & Advanced Materials/Materials Processing & Manufacturing Technologies

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