

Concrete uses fungi to fill cracks

Scientists have been studying to create concrete that combines spores of the fungus *Trichoderma reesei*, along with nutrients, placed in a concrete mixture to create the ability to self-fill if there are cracks.

Inspired by the self-healing ability of humans, Congrui Jin, Guangwen Zhou and David Davies from Binghamton University in New York, together with Ning Zhang from Rutgers University, have been studying to create a self-healing concrete. *Trichoderma reesei*, along with nutrients, is placed in a concrete mixture to create the ability to self-fill if there are cracks.

When the concrete has hardened, the spores remain inactive until the first small cracks appear. When concrete cracks, water and oxygen will enter the structure. This causes the spores to germinate, grow and precipitate calcium carbonate (CaCO_3), thereby causing cracks to quickly fill over time.



Assistant Professor Jin said: " *When the cracks are completely filled, there is no more water and oxygen inside. At this time, the fungus continues to form a spore. When meeting the conditions convenient as concrete appears cracks, fungal spores in concrete are quickly awakened* '.

The research is still in its early stages and in the meantime, scientists from Newcastle University and Bath University have developed self-healing concrete combining calcium carbonate-producing bacteria.

This study was published in *Construction and Building Materials*.

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