A self-healing protective coating for concrete

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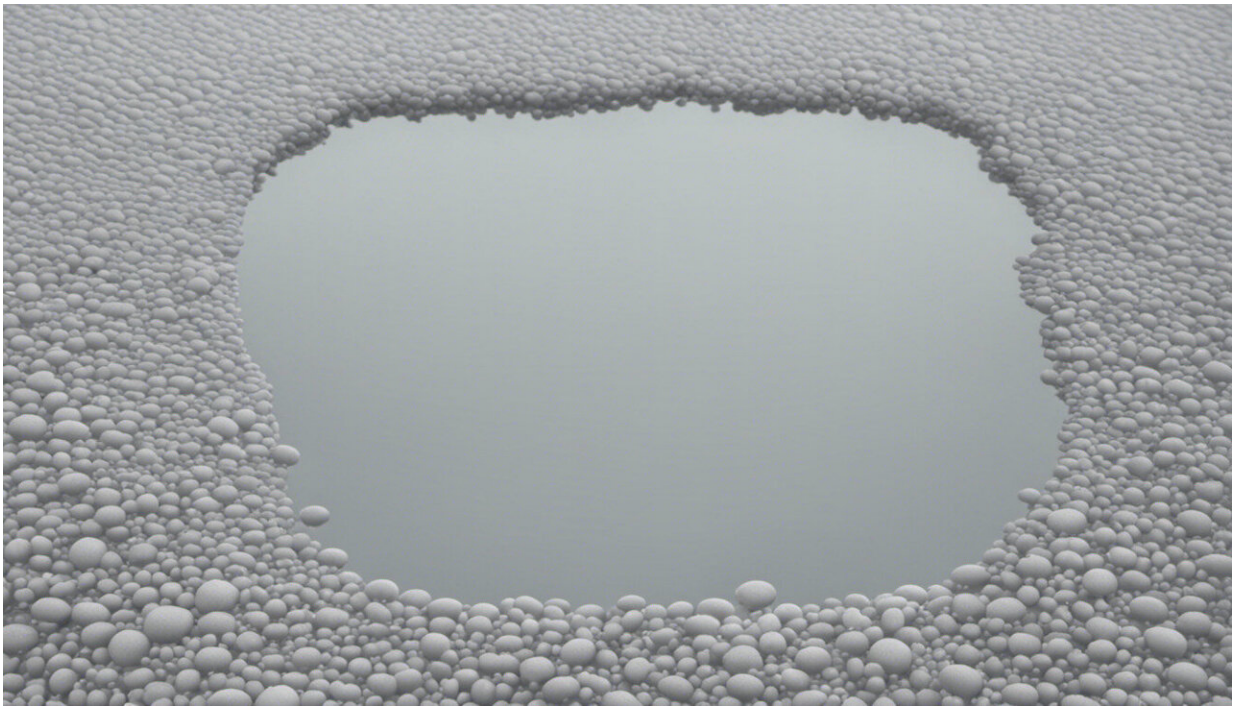

Credit: AI-generated image (disclaimer)

Scientists are reporting development of what they describe as the first self-healing protective coating for cracks in concrete, the world's most widely used building material. Their study on the material—which is inexpensive and environmentally friendly—appears in the journal *ACS Applied Materials & Interfaces*.

Chan-Moon Chung and colleagues explain that protecting concrete

roads, bridges and other structures from developing tiny cracks has been a major technological challenge. Cracks allow water, salt used for deicing and air to enter the concrete. During winter weather, water in the cracks freezes, expands and the cracks get bigger, with road salt speeding concrete's deterioration. "Although several reports of self-healing anticorrosive coatings for metal protection have appeared, there have been no reports on self-healing protective coating for concrete," say the scientists.

They describe development of such a coating, one that contains microcapsules loaded with a material that seals cracks. Cracking ruptures the microcapsules, releasing the healing agent. Sunlight shining onto the concrete activates and solidifies the sealant. "Our self-healing coating is the first example of capsule-type photo-induced self-healing system, and offers the advantages of catalyst-free, environment-friendly, inexpensive, practical healing," the report states.

More information: Article: Sunlight-Induced Self-Healing of a Microcapsule-Type Protective Coating, *ACS Applied Materials & Interfaces*.

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