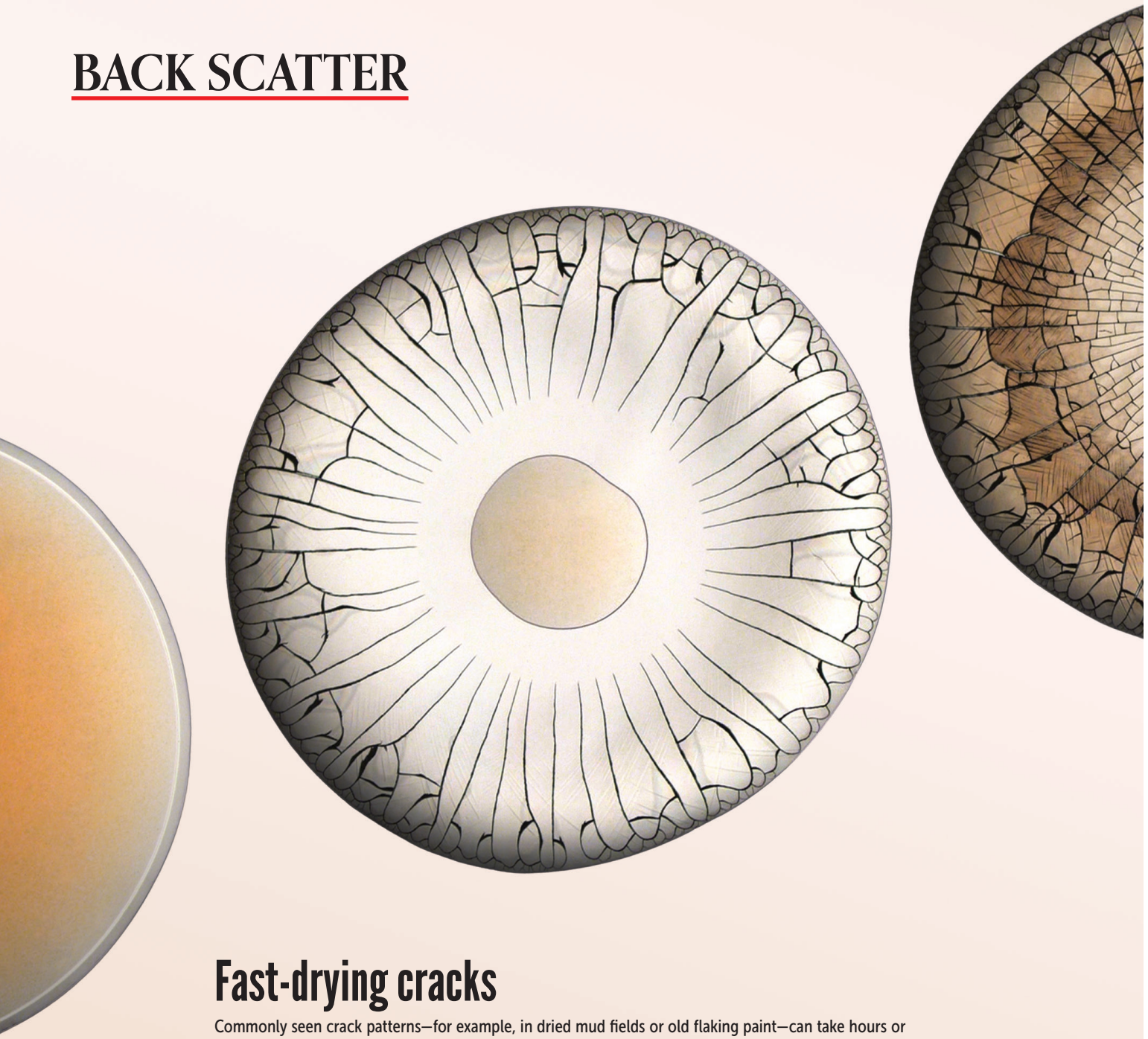

# Fast-drying cracks

Commonly seen crack patterns—for example, in dried mud fields or old flaking paint—can take hours or even years to form. But the ones shown here took shape in just two minutes. MIT's Paul Lilin, Mario Ibrahim, and Irmgard Bischofberger probed the crack-formation dynamics and found that in a millimeter-sized drop of water with suspended nanoparticles, the nanoparticles accumulate and form a solid deposit at the drop's outer edge (left). As the water evaporates, the solid deposit grows inward, drying stresses build in the deposit, and radial cracks form (center). After two minutes of drying, the solid deposit covers the entire area of the drop and includes many cracks in the radial and orthoradial directions (right).

Spurred by their wealth of quickly acquired crack data, the researchers developed a model to estimate where cracks may form as a function of both preexisting cracks and the varying thickness of the deposit. Improved predictions of crack dynamics have value beyond simply explaining patterns found in nature. A better understanding of cracks found in the paint of old artwork, for example, has been used to decipher what methods an artist may have used and the condition of the work. (P. Lilin, M. Ibrahim, I. Bischofberger, *Sci. Adv.* **10**, eadp3746, 2024; image submitted by the authors.) —AL

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