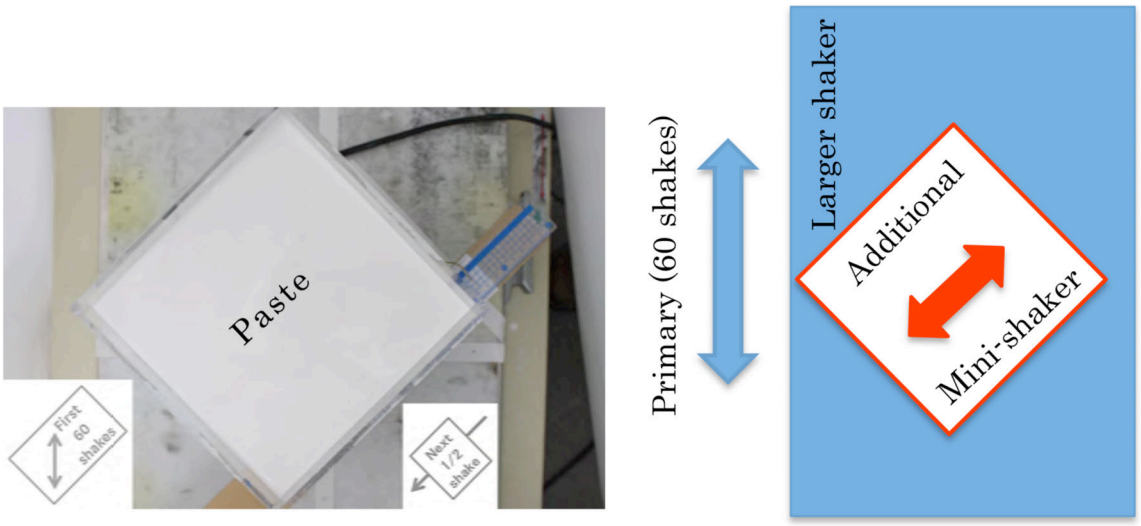
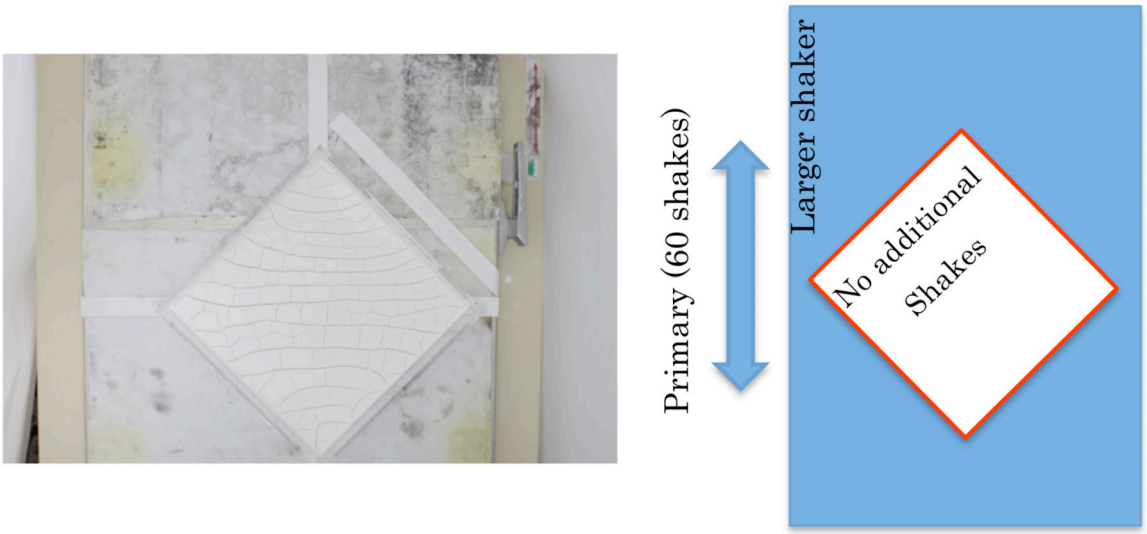
Supplementary material for [Akio Nakahara, Tomoki Hiraoka, Rokuya Hayashi, Yousuke Matsuo and So Kitsunezaki, [2018], [Mechanism of memory effect of paste which dominates desiccation crack patterns], *Phil. Trans. R. Soc. A.* doi: 10.1098/rsta.2017.0395.

Title

Mechanism of memory effect of paste which dominates desiccation crack patterns



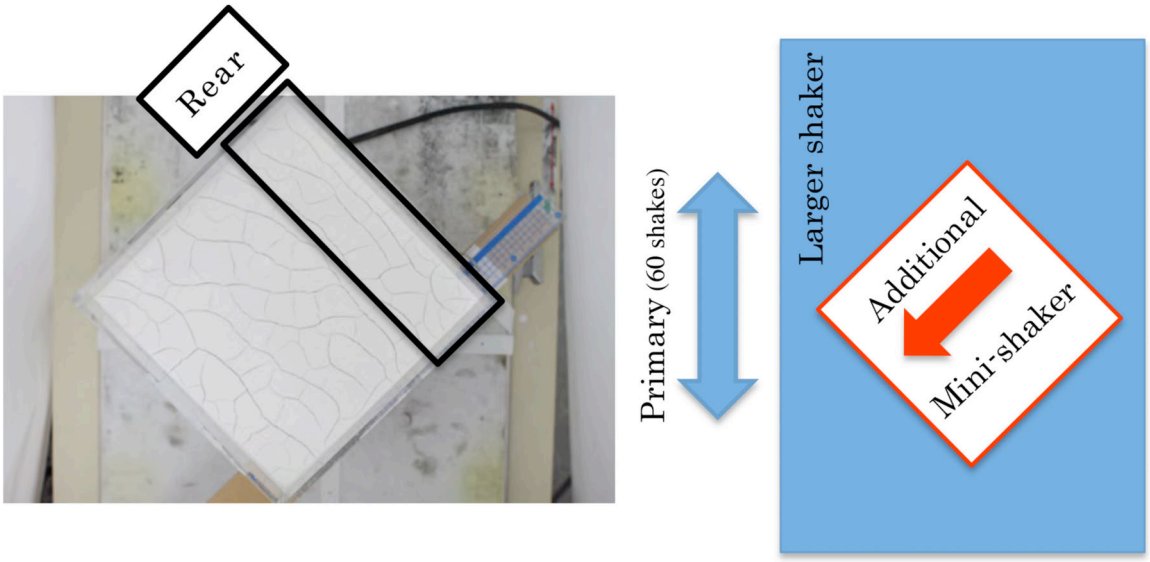
Supplementary Figure 1: Directions of primary and additional shakes.
The protocol of rewriting-memory experiments is explained here. (a) A mini-shaker Model M-6 (Takashow, Japan) is set on a medium size shaker NR-80 (TAITEC, Koshigaya, Japan), which is larger than the mini-shaker. We pour a water-poor paste of calcium carbonate into an acrylic container with 200mm each side, which is set on a mini-shaker. (b) Directions of shakes. First the paste is primarily vibrated horizontally in one direction (indicated by a blue arrow) for 60 shakes by a larger shaker. Next it is additionally vibrated horizontally by a mini-shaker but in a different direction (indicated by a red arrow), the angle of which is π/4 different from the first one (blue). The duration of the additional vibration is regarded as a controlling parameter in each experiment.



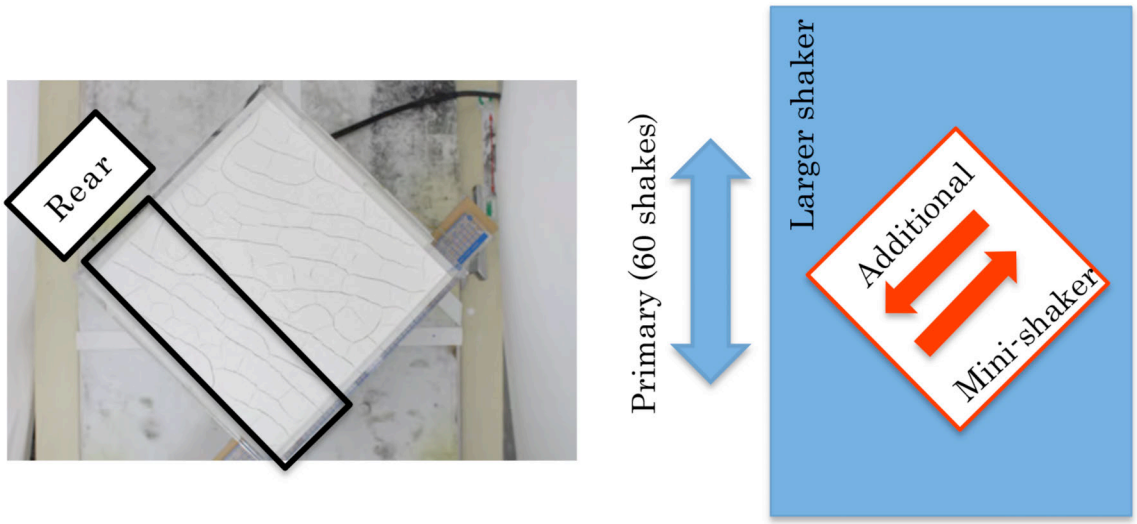
Supplementary Figure 2: No additional shakes.
All main cracks propagate in a direction perpendicular to the direction of primary 60 shakes.

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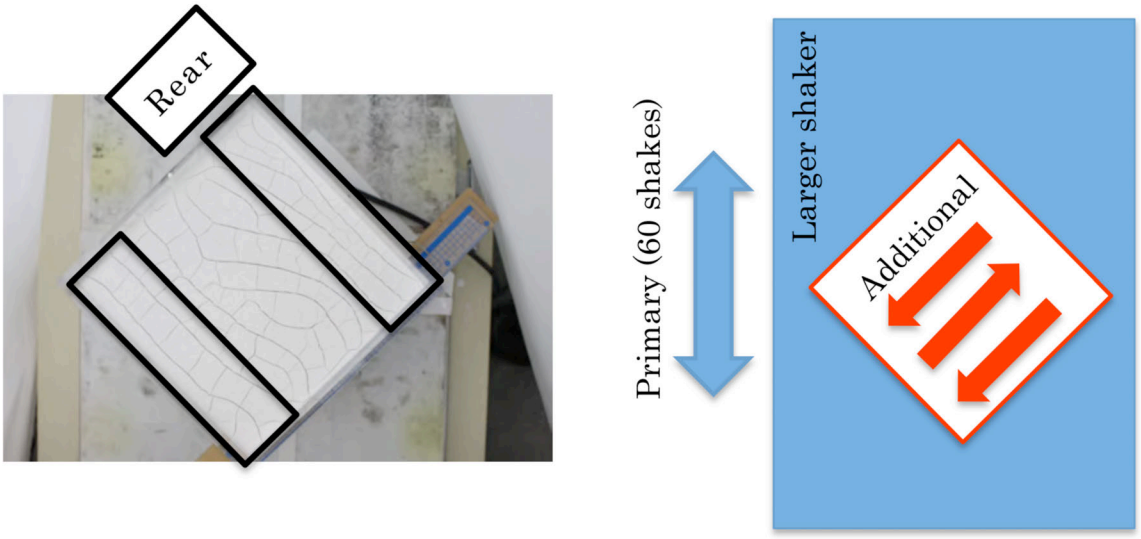
Supplementary Figure 3: Duration of additional shakes is 1/2 shake.
Note that the region represented as an open rectangle surrounded by bold lines is a rear region at an emergency braking and there the memory of primary vibration is replaced by the memory of additional vibration.



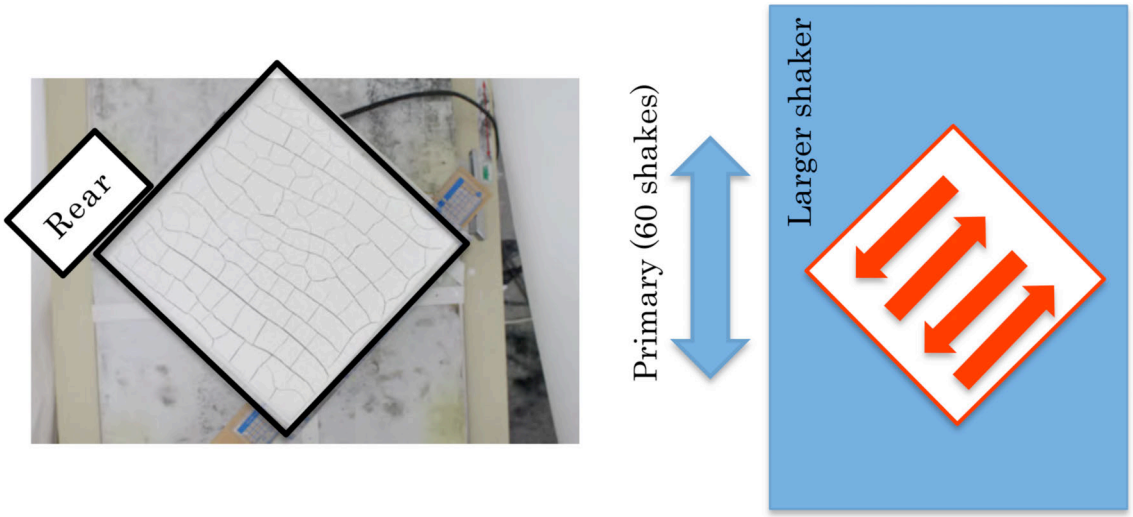
Supplementary Figure 4: Duration of additional shakes is 1 shake.
Note that the region represented as an open rectangle surrounded by bold lines is a rear region at an emergency braking and there the memory of primary vibration is replaced by the memory of additional vibration.

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Supplementary Figure 5: Duration of additional shakes is 1.5 shakes.
While a memory of primary vibration is replaced by the memory of additional vibration in a rear region at an emergency braking, the memory of additional vibration still remains in a former rear region just after the 1 additional shake (the rear region in Fig. S4) due to the non-linear effect.



Supplementary Figure 6: Duration of additional shakes is 2 shakes.
This figure shows that 2 additional shakes is enough to rewrite new memory on old memory everywhere in the system.

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