

Abstract Submitted  
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**Fracture scaling in columnar cornstarch** LUCAS GOEHRING,  
STEPHEN MORRIS, University of Toronto — We have studied fracture spacing  
in desiccated cornstarch slurries, which exhibit columnar jointing. This fracture  
process creates long hexagonal pillars, and is famous for causing spectacular geo-  
logic features such as the Giants Causeway. The columnar pattern is formed as a  
planar network of cracks pass through a cooling or drying body. Even in simple  
2D shrinkage fracture experiments it can be difficult to explain the spacing between  
cracks, however, in this case it is generally believed that the crack spacing depends  
on the average crack advance rate. Using computerized feedback, we controlled the  
desiccation rate of starch slurries. Continuous measurements of sample mass were  
converted into estimates of crack position and crack advance rate. After drying,  
direct measurements of crack spacing were made throughout the sample by cutting  
up the colonnade. With a constant crack advance rate, the jointing selects a partic-  
ular scale after a transient coarsening. The selected scale does not uniquely depend  
on the final crack advance rate, but rather shows a type of memory inherited from  
its transient initiation. We present our investigations into this scaling, and how it  
depends on the fracture advance rate.

Lucas Goehring  
University of Toronto

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