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Dissolution patterns on caramel blocks CAROLINE COHEN, JULIEN DERR, MICHAEL BERHANU, SYLVAIN COURRECH DU PONT, Laboratoire Matiere et Systeme Complexes, Universite Paris Diderot — We investigate erosion by dissolution processes. We perform laboratory experiments on hard caramel bodies, which dissolve on a short timescale, compared to geological material such as limestone. We put a block of caramel, tilted from the horizontal, in a water tank without flow. The dissolution syrup, which is denser than pure water, sinks and the flow detaching from the surface creates patterns underneath the caramel block. These patterns result from the coupled dynamics of the flow detaching and the eroding surface and are reminiscent of scallops observed in the walls of phreatic cave passages. We investigate the mechanisms of formation of these structures and their evolution depending on several parameters such as the fluid density or the flow velocity. We finally parallel the formation of patterns on melting iceberg.

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