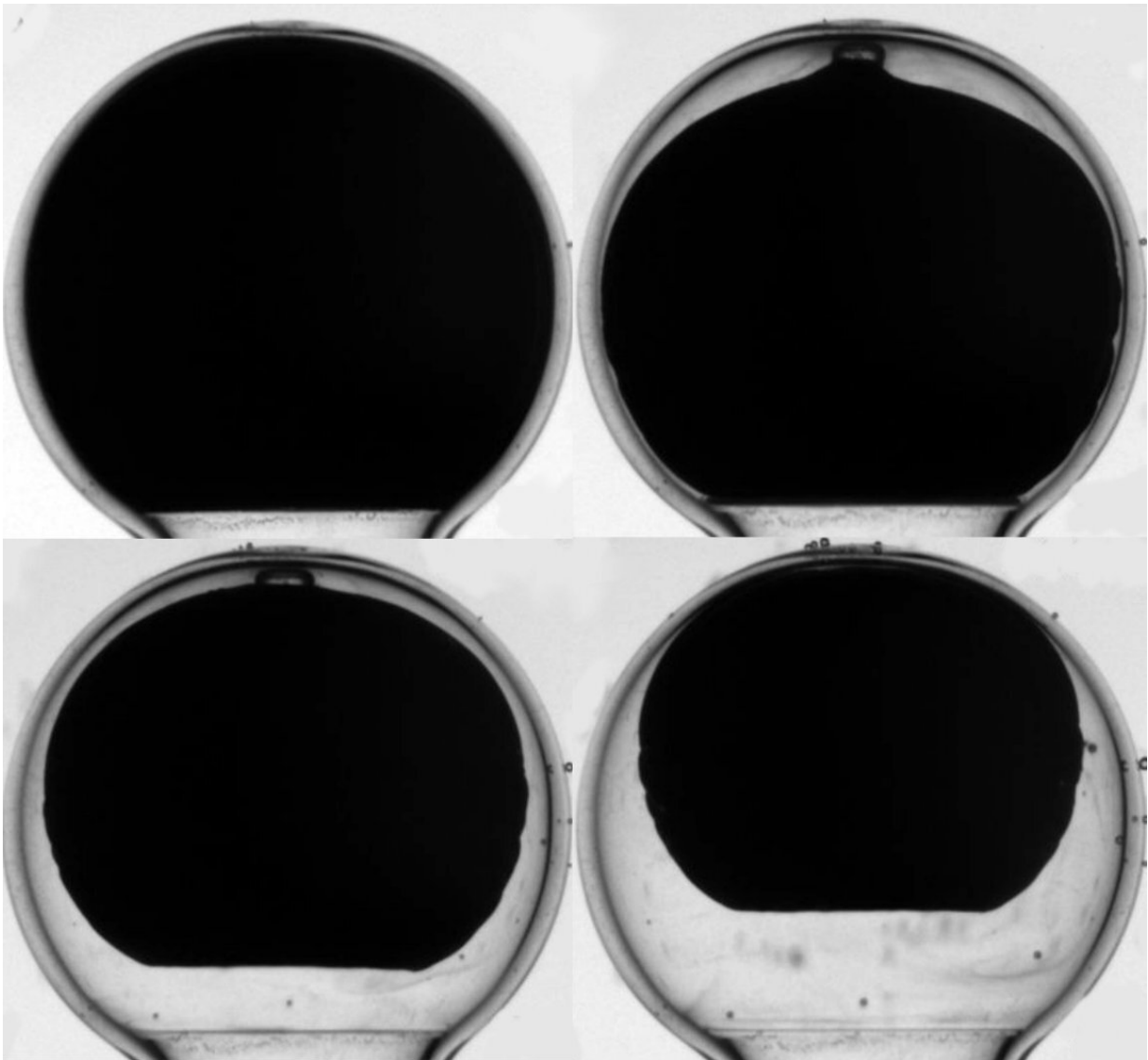


Gels made from droplets are less stable than gels made from solid particles

November 20 2020



Syneresis research on attraction between droplets and particles in liquid layers by

WUR

Gels made from droplets are less stable than gels made from solid particles. As a result, droplets also exhibit much faster and a much larger extent of amount of expelled water with time than solid particles. These are some of the findings from recent research on the driving forces of syneresis. Syneresis is a commonly seen process in foods, where a liquid layer of expelled water forms on top of e.g. yogurt. Besides food products, other materials experience syneresis, such as ceramics, coatings and paints.

The study was published in *Physical Review Letters* by Qimeng Wu, Jasper van der Gucht and Thomas Kodger from the Physical Chemistry and Soft Matter group at Wageningen University & Research. In addition to droplets, which directly resemble fat in yogurt, the researchers also investigated solid particles which showed an unexpectedly large difference between the two particle types. This may also affect other particle-based materials such as cosmetics.

Thomas Kodger at Wageningen University & research explains: "Fundamentally, the consequences of the difference in local mobility between droplets and [solid particles](#) has not been observed before, as we show in this work, and the implications on other particle based materials are still unknown; there is much physics still to be explored."

Rather than studying [food products](#) directly, the researchers created model systems to have good control over the attraction between particles and [droplets](#) and better explore the physics that occurs.

More information: Q. Wu et al. Syneresis of Colloidal Gels: Endogenous Stress and Interfacial Mobility Drive Compaction, *Physical*

Review Letters (2020). [DOI: 10.1103/PhysRevLett.125.208004](https://doi.org/10.1103/PhysRevLett.125.208004)

Provided by Wageningen University

Citation: Gels made from droplets are less stable than gels made from solid particles (2020, November 20) retrieved 25 April 2024 from <https://phys.org/news/2020-11-gels-droplets-stable-solid-particles.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.