Abstract Submitted
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Particle aggregates via droplet evaporation on superhydrophobic fractal-like substrates.[1] CAROLA SEYFERT, EVA KROLIS, Physics of Fluids, University of Twente, ERWIN J.W. BERENSCHOT, ARTURO SUSARREY-ARCE, NIELS TAS, Mesoscale Chemical Systems, University of Twente, ALVARO MARIN, Physics of Fluids, University of Twente — Sessile droplets on superhydrophobic substrates are common in nature and technology. In the case of droplets containing solid particles, the evaporation of the solvent turns into an effective tool to aggregate any non-volatile content. The high contact angles and unpinned contact lines of the droplets, induced by hydrophobicity, can lead to a complete recovery of the solid solute in form of aggregates. Under the right conditions, the solid remainder takes the form of highly compact and spherically shaped aggregates, featuring a minimal contact area with the supporting substrate. We investigate the evaporation of colloidal droplets on a new kind of superhydrophobic, micro-structured substrate, featuring fractal-like glass pillars. Such substrates present an intricate geometry with non-flat top surfaces of the pillars. Different sizes and concentrations of monodisperse polystyrene particles lead to various shapes of particle aggregates after the evaporation of the solvent.

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