Water Droplet Crane

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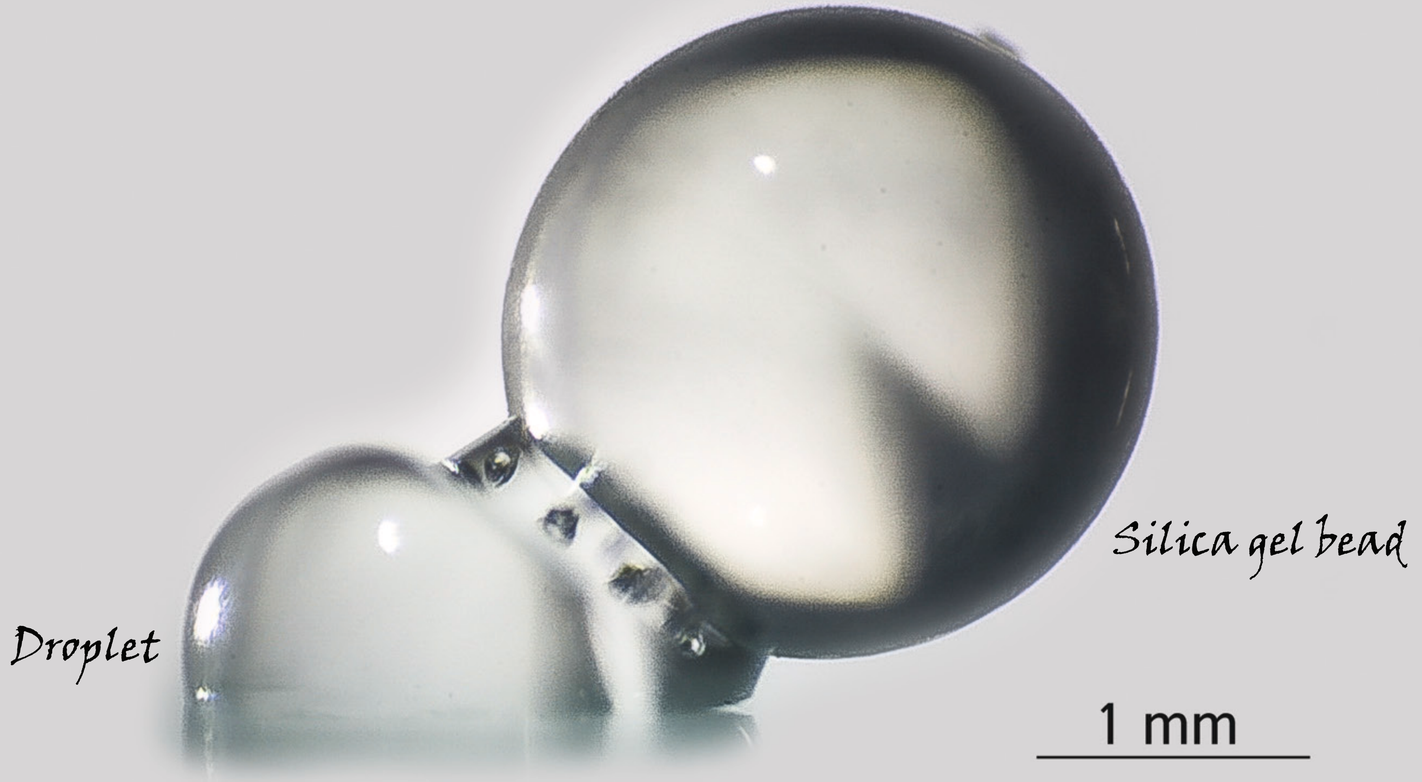
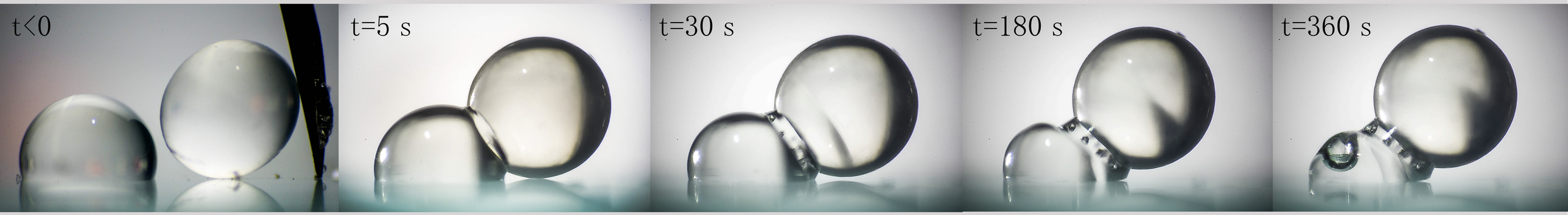


It was an accidental observation- a mesoporous silica gel bead slowly rolled to touch an evaporating droplet; and the bead was gradually craned. We examined the observation in repeated experiments. This poster shows sequence of images capturing the phenomena: a porous object craned by a liquid droplet under the influence of natural evaporation. The water droplet is dispersed with silica nanoparticles(22 nm in diameter) at 40wt.% particle loading, resting on a flat PDMS substrate. The underlying Physics involve capillary flow into the porous bead, nanoparticle agglomeration at the droplet-bead interface providing rigid support/adhesion and surface tension forces to eventually lift the bead. [1]



[1] Shaikeea, Angkur Jyoti Dipanka, Saptarshi Basu, and Lalit Bansal. "Sessile nanofluid droplet can act like a crane." Journal of colloid and interface science 512 (2018): 497-5