Dynamics of electrically guided self-assembled jammed colloidal shells on leaky dielectric drop interfaces.

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Adsorption and assembly of colloidal particles at the surface of liquid droplets are at the base of particle-stabilized emulsions and templating. It has been demonstrated that electrohydrodynamic and dielectrophoretic effects in leaky-dielectric liquid drops can be used to structure and dynamically control colloidal particle assemblies at drop surfaces[1],suggesting new routes for Janus or patchy colloidosome assembly, including jammed colloidal shells(Pickering drops) with designed heterogeneous surfaces that combine the functionalities offered by Janus or patchy particles, and those given by permeable shells such as colloidosomes[2]. It has also been demonstrated that the stress induced by uniform electric-fields incolloidal jammed Pickering drops, is absorbed by plastic deformation or surface crumpling, at electric fields above a yield stress. At stronger electric fields, simultaneous deformation and spontaneous electro-hydrodynamic rotation of Pickering drops has been observed, followed by a transition from a solid to a liquid state and tank-treading dynamics of the Pickering particle layer[3].

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