## Mechanics and Rheology of Pickering drops Probed by Electric Field Induced Stress.

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Pickering emulsion drops are fully covered with capillary bound particles.

We use uniform DC electric-fields to induce electric stress to individual Pickering drops. Such drops covered with a dense particle layer absorb compressive stresses by plastic deformation or surface crumpling, at electric fields above a yield point. At stronger electric fields, we observe simultaneous deformation and spontaneous electro- hydrodynamic rotation of Pickering drops, and in addition a transition from a solid to a liquid state of the Pickering particle layer is observed.

Some previous work in this area in our group, leading up to the present work are included in the references below [1-3].



## Figure 1

The experimental pictures (a-d) display crumpling of a silicon oil drop covered capsule covered by 10-20  $\mu$ m polyethylene particles and subjected to an uniform DC electric field of strength (a) zero and 330 V/mm after: (a,b): 0 sec., (c): 5 sec. and (d) 9 sec.. The encapsulated silicon drop is embedded in a castor oil bath.

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