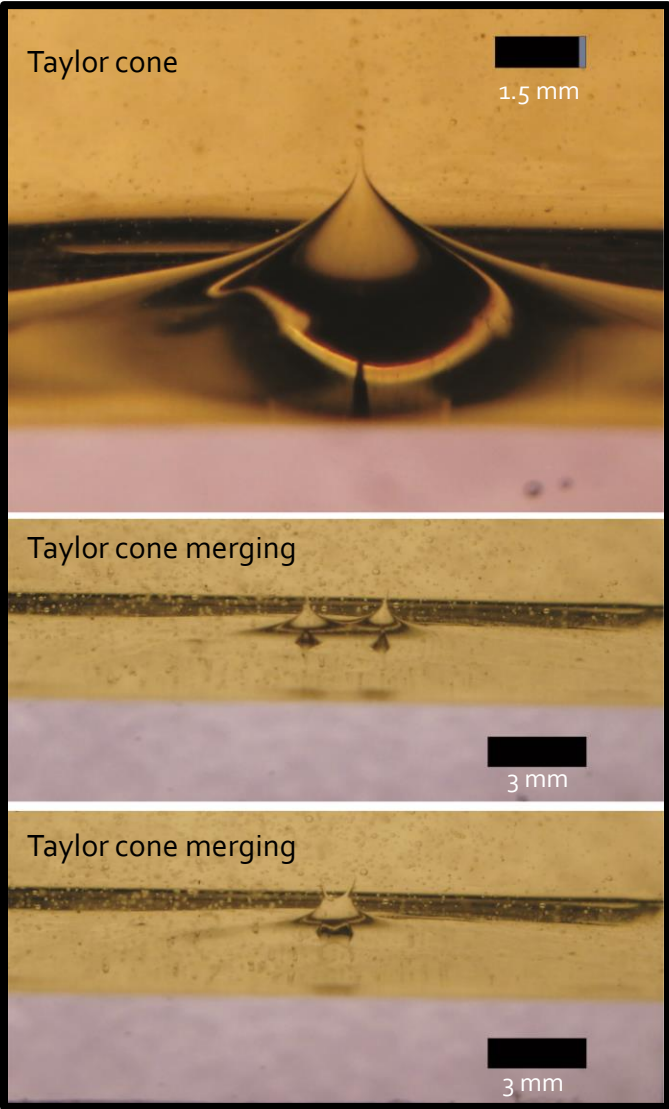


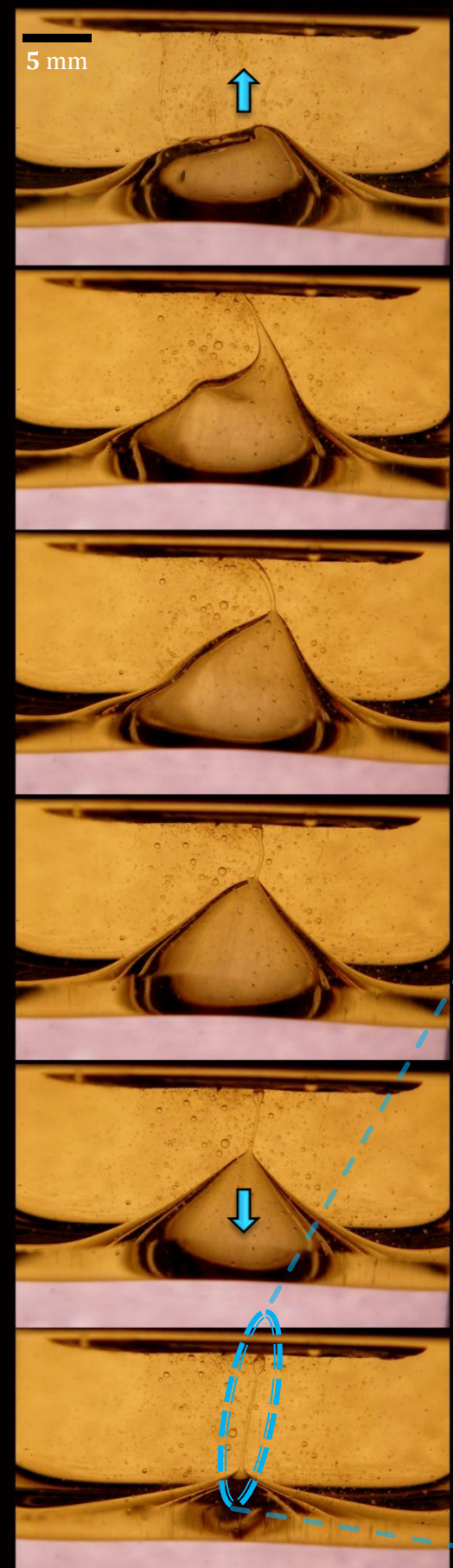
# Singularities in Electrified Planar Water/Oil Interface

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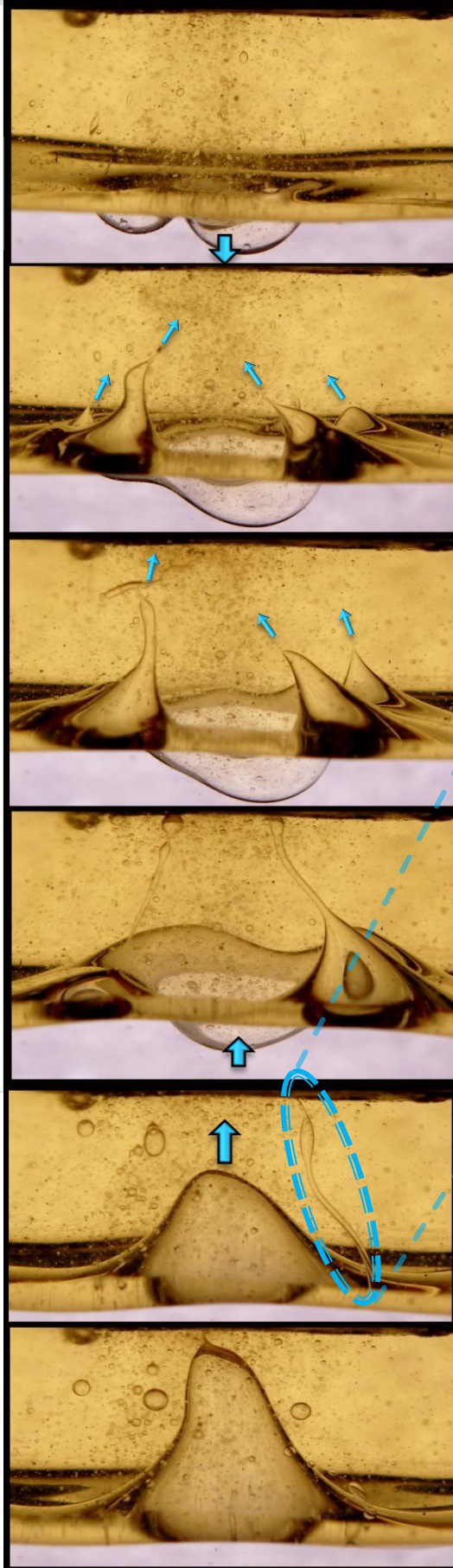
We examine the evolution of instabilities on planar water/oil interface induced by strong vertical electric field. In sufficiently high electric fields, two specific modes of instabilities occur: Thorough ascending of interface in conical shape and levitation of the interface along electric field lines\*.



Thorough ascending of interface in conical shape



Levitation of the interface along electric field lines mode



Discharge modes

Non-coalescing droplets chain

Unstable liquid ligament

Droplet chain consisting of large drops electrospaying from two conical tips



The time between successive images is 50 ms.

Discharge through stable liquid ligament



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## References

• B. Sadri, P. Tabatabaee-Hosseini, B. Vajdi Hokmabad, M. R. Charan, E. Esmailzadeh, "Experimental study on the regimes of W/O interface in the presence of vertical electric field", *Journal of colloid and interface science* 400 (2013) 104–115.