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Redistribution and removal of particles from drops surfaces SAI NUDURUPATI, MUHAMMAD JANJUA, PUSHPENDRA SINGH, New Jersey Institute of Technology, NADINE AUBRY, Carnegie Mellon University — It was recently shown by us that particles distributed on the surface of a drop can be concentrated at its poles or the equator by subjecting it to a uniform electric field. In this talk we show that the method can be used to separate particles experiencing positive dielectrophoresis on the surface a drop from those experiencing negative dielectrophoresis. This, in fact, can be used to form a composite (Janus) drop by aggregating particles of one type near the poles and of the second type near the equator. We also show that when the ratio of the distance between the electrodes to the drop diameter is smaller than a critical value the drop bridges the gap between the electrodes and then breaks into two or more major droplets. For the larger values of this ratio the drop undergoes tip-streaming. The former case is used to remove particles concentrated near the drop's equator and the latter for removing particles at the poles.

Pushpendra Singh
New Jersey Institute of Technology

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