

Abstract Submitted  
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**Interfacial effects on droplet electrohydrodynamics: particle vortices, patchy membranes, and vesicle drums**<sup>1</sup> PETIA VLAHOVSKA, Brown University — The analytical work by Acrivos group on drop dynamics in linear flows and rheology of dilute emulsions (papers with Frankel and Barthes-Biesel) have provided solid basis for more than 40 years of research on drops and capsules. These classical papers have inspired my research on drops with “complex” interfaces - surfactant-laden and particle-covered drops, and vesicles (drops encapsulated with lipid bilayer membranes). I will present some of our recent experimental observations on these systems in uniform DC and AC electric fields, where the coupling of the electric-field-induced flow and complex mechanics of the interface drives peculiar (and yet to be explained) behaviors: drum-like and asymmetric dumbbell shapes of vesicles; domains formation and motion in multicomponent membranes; particle assembly in dynamic vortices; drop kayaking. Possible implications of our findings to the design of patchy particles and electrorheology of emulsions will be discussed.

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Petia Vlahovska  
Brown University

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