



Canadian Association  
of Physicists

Association canadienne  
des physiciens et physiciennes

Contribution ID: 3918 Type: **Oral Competition (Graduate Student) / Compétition orale (Étudiant(e) du 2e ou 3e cycle)**

## **(G\*) Novel Electrohydrodynamically Driven Emulsions**

*Monday 19 June 2023 15:15 (15 minutes)*

Electrohydrodynamics of droplets immersed in an immiscible carrier fluid was first explored in a pioneering paper by G. I. Taylor who formulated the weakly conducting or leaky dielectric model and predicted the steady drop shape in the small-deformation limit. Contemporary literature in electrohydrodynamic studies focuses primarily on the deformations of single droplets. On the other hand, the collective behavior of many droplets shows a wide range of surprising phenomena. In the presence of a DC electric field, a multitude of unstable, chaotic, and turbulent behaviors are observed.

In this work, we use new substances for the continuous leaky dielectric phase and discrete dielectric phase. This opens new doors of possibilities to the experiments in electrohydrodynamics, with lower threshold voltages. The lower voltage thresholds enable new electrorheology experiments to be conducted, the results of which will be reported.

### **Keyword-1**

Electrohydrodynamics

### **Keyword-2**

Complex fluids flow

### **Keyword-3**

Externally driven soft matter

**Author:** BAHRAMINASR, Majid (Memorial University of Newfoundland)

**Co-author:** YETHIRAJ, Anand

**Presenter:** BAHRAMINASR, Majid (Memorial University of Newfoundland)

**Session Classification:** (DCMMP) M2-7 Soft condensed matter I | Matière condensée molle I (DPMCM)

**Track Classification:** Technical Sessions / Sessions techniques: Condensed Matter and Materials Physics / Physique de la matière condensée et matériaux (DCMMP-DPMCM)