Abstract Submitted
for the DFD13 Meeting of
The American Physical Society

Electric field driven bubble motion in microgravity[1] BORIS KHUSID, DANA QASEM, EZINWA ELELE, JOHN TANG, YUEYANG SHEN, New Jersey Institute of Technology, Newark, NJ — The lack of the gravity-driven gas-liquid phase separation in microgravity has severely compromised a wide range of space technologies. The proposed electro-hydrodynamic (EHD) control of the bubble motion in microgravity employs an electric force generated by an alternating current (AC) field applied directly to a fluid via capacitive coupling to external electrodes. Contrary to the currently available direct current (DC) field-based microgravity techniques, the EHD method employs flow- and field-induced forces to drive bubbles and suppresses electro-chemical reactions at the fluid/electrode interface. The overall goal of the parabolic flight tests planned in July-Aug 2013 is the validation of the EHD method for the control and manipulation of bubbles in microgravity. We will present test results at the meeting.

[1]The work is supported by NASA grant NNX09AK06G.

Boris Khusid
New Jersey Institute of Technology, Newark, NJ

Date submitted: 22 Jul 2013 Electronic form version 1.4