

Abstract Submitted
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Manipulating particle traps in a GEC reference cell through thermophoresis VICTOR LAND, Center for Astrophysics, Space Physics, and Engineering Research, Baylor University, Waco, TX, USA 76798-7316, ERICA SHEN¹, LORIN MATTHEWS, TRUELL HYDE, Center for Astrophysics, Space Physics, and Engineering Research, Baylor University, Waco, TX, USA 76798-7316 — Laboratory dusty plasma contains electrons, ions, atoms, and solid particles, which usually are micrometer sized. These particles absorb ions and electrons, obtaining an overall negative charge. A proper description of dusty plasma thus requires knowledge of both the plasma and the dust parameters; however their experimental determination is difficult without perturbing the plasma. We apply a self-consistent 2D dusty plasma fluid model to a capacitively coupled radio-frequency discharge in a Gaseous Electronics Conference reference cell. The model will be shown to produce reliable results for determining the plasma parameters at varying discharge settings. The forces on the dust particles and the formation of particle traps within the discharge will also be discussed. Such particle traps are important since they allow for the formation of differing types of dust structures and symmetry. Finally, active heating or cooling of surfaces within the discharge chamber and the manner in which they alter these particle traps will be examined.

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