4n Ac Electric Field Induced Forces on Colloidal Particles near a Planar Electrode

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Multiple techniques for manipulating nano or micron scale particles rely on the application of alternating electric fields. However, depending on the geometry of the electrodes/device, and the characteristics of the electric field, unexpected motion or additional forces can easily be induced in conjunction with the desired force(s). The research presented here determined lateral induced forces on particles above a planar electrode, through the measurement of the vertical motion of a single particle, and numerical simulation. The conclusions of this work suggest that electrolyte type, particle size, field frequency and the governing resistance are particularly important in determining particle behavior.