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## NUMERICAL ANALYSIS OF DIELECTRIC MICRO-PARTICLE MOTION IN A FLUID AND ELECTRIC FIELD

**ABSTRACT** *We present numerical analysis of a coupled problem composed of fluidics, electromagnetic and particle dynamics. The forces acting on the dielectric micro-particle consist of a dielectrophoretic (DEP) force, drag force and gravitational force in the proposed analysis model. DEP force and drag force are calculated using the distribution of the electric field and fluid velocity field to analyze the characteristic of the micro-particle motion. The forces exerted by each field are driving terms in the Newton's equation for particle motion. The designed particle separating device, which has the one inlet and the two outlets, is simulated to validate proposed numerical scheme. The analysis results show the trace of the micro-particles can be analyzed using the proposed numerical approach.*

**Keywords:** *dielectric micro-particles, electric field particle separating, motion, fluid, dielectrophoretic force, drag force, gravitational force, Newton's equation, simulation, numerical approach.*