

Abstract Submitted  
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**Dynamical properties of colloids immersed in a uniform electric field at high densities** MATTHEW WOZNIAK<sup>1</sup>, MANUEL VALERA<sup>2</sup>, ATHULA HERAT<sup>3</sup>, Department of Physics & Pre-Engineering, Slippery Rock University — In light of the recent interest in the control of colloidal systems, we have explored specific properties of electrically interacting colloidal particles. We explored the structural and dynamical characteristics of mono-disperse systems of colloidal particles that are affected by dipole-dipole interactions while immersed in a uniform electric field and compared with the outcomes that could occur if different sizes of particles are mixed. We used molecular dynamics simulations to study the systems. We present results for the diffusion coefficient and other dynamical properties in the high density regime.

<sup>1</sup>Matthew is a senior Computational Physics student at Slippery Rock University, interested in computational solutions to problems of random systems.

<sup>2</sup>Dr. Manuel Valera is an Assistant Professor of Physics & Pre-Engineering. He has been interested in electrically interacting colloidal systems, particularly their transitions to the glassy state and related properties.

<sup>3</sup>Dr. Athula Herat is an Assistant Professor of Physics & Pre-Engineering. He teaches Computational Physics, among other courses, has assisted with the coding associated with this experiment.

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