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Electrokinetic Phenomena of Colloidal Suspensions JIAN LIU, Department of Physics and Texas Center for Superconductivity, University of Houston, 202 Houston Science Center, Houston, Texas 77204-5002, JASON SHULMAN, Department of Physics and Texas Center for Superconductivity, University of Houston, 202 Houston Science Center, Houston, Texas 77204-5002, YUYI XUE, Department of Physics and Texas Center for Superconductivity, University of Houston, 202 Houston Science Center, Houston, Texas 77204-5002, FENG CHEN, Department of Physics and Texas Center for Superconductivity, University of Houston, 202 Houston Science Center, Houston, Texas 77204-5002, CHING-WU CHU*, Department of Physics and Texas Center for Superconductivity, University of Houston, 202 Houston Science Center, Houston, Texas 77204-5002 — We investigate the colloidal particle motion of colloid suspension in which giant electrorheological effect has been found. The colloids consist of urea coated $\text{Ba}_{0.8}\text{Rb}_{0.4}\text{TiO}(\text{C}_2\text{O}_4)_2$ particles suspended in silicon oil. In the experiment, a cell with cross-aligned top and bottom stripe-electrodes is used. The electric potential, the field and the field gradient, therefore, possess different space distribution. Significant difference of colloids motions and equilibrium particle distributions are observed under ac, dc and ac+dc fields. The result suggests dipole may not be the only factor for colloid aggregation (meso-structure), and hence, its electrorheological effect. *also at Hong Kong University of Science and Technology and Lawrence Berkeley National Laboratory

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