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Plasma-like negative capacitance in a nano-colloid JASON SHULMAN, Texas Center for Superconductivity, University of Houston, FENG CHEN, STEPHEN TSUI, YUYI XUE, C. W. CHU[1], Texas Center for Superconductivity, University of Houston — A negative capacitance has been observed in an electrorheological fluid consisting of urea-coated $Ba_{0.8}Rb_{0.4}TiO(C_2O_4)_2$ nanoparticles in silicone oil. The response is linear over a broad range of conditions. Previously, it was shown that this phenomenon originates at the surfaces of the nanoparticles. In this work, we demonstrate that the low frequency dispersions of both the resistance and capacitance are consistent with the free-carrier plasma model, while the transient behavior demonstrates an unusual energy storage mechanism.

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