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**Viscoelasticity of dilute capsule suspension under Stokes flows** DAIKI MATSUNAGA, YOHSUKE IMAI, TAKAMI YAMAGUCHI, TAKUJI ISHIKAWA, Tohoku University — A capsule is a liquid drop enclosed by a deformable membrane. Though the capsule deformation and suspension rheology in a simple shear flow is well understood, study of those in oscillating shear flow has been limited to small deformation theory. We investigated the viscoelasticity of dilute capsule suspension by applying an oscillating shear flow. We a used numerical method developed by Walter et al., in which the boundary element method for fluid mechanics is coupled with the finite element method for membrane mechanics. Simulations were performed by changing three parameters: capillary number, viscosity ratio and non-dimensional frequency of the applied shear. We found that the maximum deformation keeps a constant value in the low frequency range, while it is inversely proportional to the frequency in the high frequency range. The result of viscoelasticity suggests that both the capillary number and viscosity ratio are important parameters in the low frequency range, while only the viscosity ratio affects the viscoelasticity in the high frequency range.

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