

Abstract Submitted  
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**Suspension Dynamics of Liquefied Lignocellulosic Biomass in Pipeflow using Echo Particle Image Velocimetry** NICHOLAS DEMARCHI, CHRISTOPHER WHITE, University of New Hampshire — Echo particle image velocimetry (EPIV) is used to acquire planar fields of velocity in pipeflow of liquefied biomass. The biomass used is acid washed corn stover liquefied by enzymatic hydrolysis. The liquefaction process produces a complex multiphase fluid suspension with a microstructure consisting of insoluble solid particles dispersed within a continuous liquid phase. The solid particles are generally heavier than the liquid phase, non-spherical, and distributed over a wide range of aspect ratios and sizes. Batches of liquefied biomass are produced at incremental mass loadings doubling from 1.5% to 12%. The rheology, microstructure, and solid particle settling velocities of the liquefied biomass as a function of mass loading is first quantified. Next, EPIV is used to measure and quantify the flow dynamics of liquefied biomass suspensions under laminar pressure driven pipeflow conditions. Finally, Information gathered from the experimental data is used to simulate particle settling rates and predict the particle physics under the same pipeflow conditions.?

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