

Abstract Submitted
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PIV measurements of a dilute suspension flow over and through various porous media models¹ THERESA WILKIE, EILEEN HAFFNER, PARISA MIRBOD, University of Illinois at Chicago — Porous media has become more prevalent in various engineering applications. This study's aim is to provide insight on how different properties of porous media would affect a dilute suspension flow. Specifically, a suspension fluid containing neutrally buoyant, non-colloidal, non-Brownian, rigid, spherical particles with a volume fraction of 3% was examined as it passed over and through various porous media models with porosities of 0.7, 0.8, and 0.9 and thicknesses of 5mm and 3mm. All Reynolds numbers were kept very low to neglect inertial effects. Particle image velocimetry (PIV) technique was used to obtain two-dimensional velocity vectors for planes on top and within the porous media models. To quantify the effect of different porosities and the porous media thickness on a dilute suspension the slip velocity and shear rate analyzed at the suspension-porous interface. We also compared our experimental results with the predicted model, and found a good agreement.

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