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Experimental study of the flow over random porous media REZA GHEISARI, PARISA MIRBOD, Department of Mechanical and Aeronautical Engineering, Clarkson University, Potsdam, New York, 13699 — Flow over porous media has significant applications in biological systems, and industrial processes. The main focus of the majority of works in this area has been on the formulation of appropriate conditions at the interface separating the pure fluid from the porous medium flow. Furthermore, recent experimental measurements have been limited to explore the flow over superhydrophobic surfaces as well as homogenous patterns. Previous studies show that the drag force due to sliding friction can be dramatically reduced if the elastic restoring force of the solid phase is small compared to the lift force generated by transiently trapped air inside the porous material. In this study, particle image velocimetry was used to observe slip velocities, shear stress, and drag reductions over a random soft porous media. Results illustrate the significant effect of these patterns on the streamlines, which can potentially affect drag force.

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