

Abstract Submitted  
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**Flow near the boundary of random soft porous media<sup>1</sup>** ZHENXING WU, PARISA MIRBOD, Clarkson University — Understanding the velocity profile at the interfacial region between the porous layer and the free flow could help to accurately predict the flow rate and momentum in a soft porous medium and would lead to the design of advanced and efficient engineering and technological applications. We experimentally studied the characteristics of flow over the boundary of random soft porous materials. A planar particle image velocimetry (PIV) technique was used to obtain the detailed slip velocity at the interface between the porous media and the free flow region. We found that the normalized slip velocity depends on the porosity and pore space of porous medium. It was also found that the depth of the screening length inside the porous material is of the order of the channel height, which is different from the Brinkman's prediction. Using our experimental measurements, we then examined a model for the laminar flow over and inside porous media. We also analyzed an equation to determine the permeability of random soft porous media. This study provided the very first detailed analysis of flow over and at the interface of various soft random porous media using PIV technique and a step forward in understanding and modeling of the flow over soft random porous media.

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