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Characterization of Turbulent Friction Drag Over Biofilm Like Surfaces JAMES GOSE, ELIZABETH CALLISON, University of Michigan — Biofilms are complex ever-changing colonies of bacteria and microbes that form on wetted surfaces. When biofilm formation occurs at flow boundaries, the associated friction drag is increased, which can adversely affect the performance of hydrodynamic systems. The production of increased frictional drag of biofilms is not well understood; however, it is often attributed to the surface roughness, compliance, and the presence of undulating streamers in the flow boundary. Recent studies on living biofilms and rigid analogs have helped to address this very issue with acknowledgement that the biofilm evolution over time as it is exposed to flow raised additional questions. In this study, it is proposed to characterize biofilm like surfaces that have a more stable formation (i.e. non-evolving, such as faux fur), and their own three-dimensionally printed rigid replicas in a controlled environment. The surfaces will be evaluated in the Skin-Friction Flow Facility at the University of Michigan using streamwise pressure drop measurements, planar particle image velocimetry, and in situ measurement of the biofilm replacement with a line scanner. Comparisons of the resistance curves for the rigid replicas and biofilm like surfaces will be discussed and flow measurements will be presented.

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