

Abstract Submitted
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Turbulent drag reduction with liquid-infused surfaces¹ ALEXANDER SMITS, Princeton University and Monash University, TYLER VAN BUREN, Princeton University — We present turbulent skin friction reduction over liquid-impregnated surfaces in Taylor-Couette flow. The surface of the inner cylinder of the facility contains square grooves, with widths from 100 μm to 800 μm and a fixed liquid area of half the total area. Alkane liquids are infused in the surface with viscosities from $\sim 1/3$ to 2 times that of water. For Reynolds numbers up to $Re_d=10,500$ corresponding to a flow shear of $\tau=50$ Pa, we achieve drag reduction exceeding 30%, three times higher than ever reported for liquid-infused surfaces.

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