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Lubricant-impregnated surfaces for drag reduction in viscous laminar flow BRIAN SOLOMON, KARIM KHALIL, KRIPA VARANASI, Massachusetts Institute of Technology, MIT TEAM — For the first time, we explore the potential of lubricant impregnated surfaces (LIS) in reducing drag. LIS, inspired by the surface of the Nepenthes pitcher plant, have been introduced as a novel way of functionalizing a surface. LIS are characterized by extremely low contact angle hysteresis and have been show to effectively repel various liquids including water, oils, ketchup and blood. Motivated by the slippery nature of such surfaces, we explore the potential of LIS to reduce drag in internal flows. We observe a reduction in drag for LIS surfaces in a viscous laminar drag flow and model the impact of relevant system parameters (lubricant viscosity, working fluid viscosity, solid fraction, depth of texture, etc.).

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