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**Slip length of liquid-infused surfaces in high aspect-ratio microchannels**[1] ARUNRAJ BALAJI, MATTHEW FU, MARCUS HULTMARK, Princeton University — Liquid-infused surfaces (LIS) derive their drag-reduction effects from the presence of flow inside lubricant-filled surface cavities or grooves. This behavior has been characterized by an effective slip length, which is known to be the primary parameter in determining drag-reduction. Though slip length has been theoretically parametrized as a function of LIS geometry, fluid properties, and channel dimensions, previous studies were performed without consideration of all three variables simultaneously. Specifically, existing models do not address the regime in which channel height is on the order of LIS-feature length scale. High aspect-ratio microchannels with rectangular-groove LIS along one wall are constructed and tested. Pressure measurements are used to determine effective slip length for various surface geometries, channel heights, and viscosity ratios. Results are compared with theoretical expectations.

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