

Abstract Submitted
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Experimental study of squeeze-film flow related to human voice production¹ DAN LO FORTE, SCOTT THOMSON, Brigham Young University — Airway surface liquid (ASL) consists of a Newtonian/non-Newtonian bi-layer and lines the human airway, including the vocal folds. Several studies indicate that ASL properties affect vocal fold operation. In particular, adverse ASL properties may lead to voice discomfort and damage. This presentation will focus on research performed to elucidate the role of the ASL in voice production. Experimental measurements of squeeze-flow between parallel plates (similar to the ASL during vocalization) are presented. Simultaneous film thickness, force, and high-speed image data are reported and compared with computational solutions. The resulting squeeze force is compared for varying parameters including film thickness and fluid properties. This data will help develop an accurate ASL model to study its function in depth. Long-term results may help in treatment of voice disorders. Additionally this work provides experimental data to support the validation of existing thin-film squeeze-flow equations.

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