

THRUST VECTORING OF A SUPERSONIC MICRO-NOZZLE. *C. Szachta*, J.D. Kozak*, Department of Mechanical Engineering, cjs8178@rit.edu, jdkeme@rit.edu

Control of flows on the micron scale has attracted attention due to its multitude of applications. Using Deep Reactive Ion Etching (DRIE) a bell nozzle and two conical nozzles with throat dimensions of $600\mu\text{m} \times 300\mu\text{m}$ have been realized. The three micro-nozzle profiles have been fabricated at the RIT Semiconductor and Microsystems Fabrication Laboratory (SMFL). A novel approach to thrust vectoring is being investigated with these micro-nozzles. The actuation of a silicone membrane on the upper surface of the nozzle throat will provide a mechanism to reduce the throat cross-sectional area, and consequently increase the nozzle's expansion ratio. This will provide active control over the exiting jet, which has applications in mixing, cooling/heating, and thrusting. The design and fabrication of this system will be discussed.