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Development of NSTAP: Nanoscale Thermal Anemometry Probe
GARY KUNKEL, ALEXANDER SMITS, CRAIG ARNOLD, Princeton University — The current development of NSTAP, a nanoscale thermal anemometry probe funded by the National Science Foundation CTS-0421147, will be presented. Standard semiconductor processing techniques, focused ion beam milling, and precision laser micromachining are used to manufacture free standing platinum wires on current carrying aerodynamic supports. The main purpose of this probe is to use it in the high-pressure, high-Reynolds-number test facilities at Princeton University and therefore the ultimate goal is to decrease the length of the sensing wire to less than 10 μm. Preliminary results on $0.3 \times 0.3 \times 60$ μm wires are promising and fluctuating responses to turbulent flow are similar to those from conventional wires. The challenges of development and electronic characterization of the probe also will be discussed.

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