

# Quantitative measurement of gas pressure drop along T- shaped micro channels by interferometry

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## Abstract

The study of gas flows in microchannels has received considerably more attention in the literature from a simulation perspective than an experimental. The majority of the experimental work has emphasis on the global measurements at the inlet or exit of the microchannel instead locally along it. In this paper some efforts were made to measure the pressure drop along T-shaped micro channel by using interferometry. The two side channels were served as gas entrances and they were both open to air and the channel outlet was being vacuumed during experiments. A Mach-Zehnder interference microscopy was built for the measurement of gas pressure drop along the mixing channel. Some points along the mixing channel were selected for interferometric measurements. Simulations were first developed in unsteady condition by using Ansys Fluent to verify the nonexistence of transient phenomena of gas flow in the defined condition and then run again in steady condition to get the theoretical pressure drop that would be used for comparison with experimental results.