

Abstract Submitted
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Measurement of the Wall Shear Stress Field Created by a Supersonic Impinging Microjet BRIDGET SCHABRON, JONATHAN NAUGHTON, University of Wyoming, FARRUKH ALVI, Florida State University — The study of wall shear stress beneath a supersonic impinging microjet was carried out using oil film interferometry. The measurement of wall shear stress in a microjet is an interesting flow both for its practical applications as well as the challenges the surface flow poses. The wall shear stress measurement challenges for this flow included the radially symmetric wall shear stress field, the very high gradients of wall shear stress, optical access issues, and the significant temperature variations on the surface that affect the oil's viscosity. Measurements were made for various jet height above the plate h to jet diameter D ratios and for various pressure ratios. Analysis of the resulting interferograms and the challenges posed by this particular geometry are discussed. The results demonstrate the capability of oil film interferometry, particularly its dynamic range, for measuring wall shear stress in complex flow.

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