Review of Atomization: Current Knowledge and Recent Trends for Propulsion Combustors

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Abstract

This survey paper reviews the current status of knowledge, understanding, theory and models for the physics of atomization, particularly as it applies to gas turbine and rocket applications. Three areas pertinent to atomization issues in gas turbine and rocket combustors are covered: 1) recent advances in primary atomization physics and simulation techniques, 2) state-of-the-art understanding of selected physical mechanisms in atomization and dense phase mixing for rocket combustors, 3) current modeling approaches for gas turbine combustors. This paper updates several atomization technologies discussed in, and serves as a companion to, a related paper presented at the Eighth International Conference on Liquid Atomization and Spray Systems (ICLASS-2000) at Pasadena, CA, July 16-20, 2000.

Key words: gas turbine sprays, rocket sprays, CFD, volume of fluid models, level set models

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