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Study of Mass Distribution from Two Phase Unlike Impinging Injectors RAKESH PRABHAKARAN, B.N. RAGHUNANDAN, SOWMYA BOLAKONDA, I.I.Sc — Two phase impinging injectors as an alternative to conventional coaxial injectors in propulsive devices offer many advantages. In addition to simplicity of design and fabrication, spray shaping according to the need is possible with gas-liquid impingement. The fact that mass distribution can be varied as desired is the main theme of this study with air and water as working fluids. In the doublet configuration, the condition of the gas jet is varied and its effect on the mass distribution is studied. As can be visualized, the circularly symmetric spray mass distribution gets distorted in the presence of the gas jet. Even at low pressure ratios, near elliptical mass distribution results. As gas pressure increases, there is a tendency for the mass distribution to be shifted in the direction of gas jet. The effect of some of the geometric parameters on the mass distribution as well as drop-size distribution are studied. Mechanistic details of jet penetration and the inherent instability in the impinging system are discussed. The data base generated is expected to help designers in spray shaping applications.

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