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## Spray Characterization of Dual Impinging Jets with a Splash Plate

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### ABSTRACT

The use of splash plates and dual impinging liquid jets are common methods for fuel atomization, but the combination of these methods has not been explored. The goal of this experiment is to analyze how splash plate position and orientation affect the spray geometry for this combined method. The spray patterns are observed for a single jet against a splash plate and two orientations of dual impinging jets against a splash plate. For all three cases, the spray patterns are analyzed for various splash plate angles between 30 and 60 degrees relative to the jet centerline. For the dual impinging jets, the splash plate is tested in multiple positions relative the two jets' unimpeded impingement point. The characteristics of the spray patterns are then analyzed using high speed video. The most desirable spray characteristics occur when the splash plate is at least two jet diameters lower than the unimpeded impingement point and at an angle between 45 and 60 degrees. The spray has a clear spreading angle and minimum back-spray when the sheet formed by the jets is coincidental with the orientation axis for the splash plate.

### KEYWORDS

Atomization, breakup, spray, characteristic, sheet, splash plate, impinging jets, impingement, angle, spreading angle