

Abstract Submitted  
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**Piercing a Liquid Droplet by a Gas Jet** NASSER ASHGRIZ, SHAYAN SADEGHPOUR, AMIRREZA AMIGHI, University of Toronto — Impingement of a gas jet on a suspended water droplet is studied experimentally. The jet penetration process depends on the jet velocity and jet to droplet diameter ratio. At small jet to diameter ratios and large enough jet velocities, the jet penetrates through the droplet. The fragmentation process of the droplet depends on the jet velocity. The gas tunnel inside the droplet has a peculiar shape, being smaller on the windward side and larger on the leeward side of the droplet. A large bubble forms on the leeward side of the droplet, which bursts forming small droplets. At larger jet to droplet diameter, the droplet fragmentation becomes more significant, with large droplet deformation. Different types of breakup process are identified and categorized according to jet to droplet diameter ratio, as well as droplet Weber number.

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