Scopus

Documents

Sphicas, P., Pickett, L.M., Skeen, S.A., Frank, J.H., Parrish, S.

Interplume velocity and extinction imaging measurements to understand spray collapse when varying injection duration or number of injections
(2018) *Atomization and Sprays*, 28 (9), pp. 837-856. Cited 1 time.

Abstract
The collapse or merging of individual plumes of direct-injection gasoline injectors is of fundamental importance to engine performance because of its impact on fuel-air mixing. However, the mechanisms of spray collapse are not fully understood. The purpose of this work is to study the effects of injection duration and multiple injections on the interaction and/or collapse of multiplume gasoline direct injection sprays. High-speed (100 kHz) particle image velocimetry is applied along a plane between plumes to observe the full temporal evolution of plume interaction and potential collapse, resolved for individual injection events. Supporting information along a line of sight is obtained using diffused back illumination. Experiments are performed under simulated engine conditions using a symmetric 8-hole injector in a high-temperature, high-pressure vessel at the "Spray G" operating conditions of the Engine Combustion Network. Longer injection duration is found to promote plume collapse, while staging fuel delivery with multiple, shorter injections is resistant to plume collapse. © 2018 by Begell House, Inc. www.begellhouse.com.

2-s2.0-85058147648
Document Type: Article
Publication Stage: Final
Source: Scopus