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MATERIALS AND STRUCTURES SYMPOSIUM (C2)
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MAGNETIC FLAME SPREAD

Abstract

Flame spread have been a topic of intense research and development from the past five decades owing to wide applicability on earth and in space. Appreciable work had been accounted from normal gravity to micro-gravity environments to fundamentally understand the behavior of flames under diverse conditions. Motivated by fire safety and combustion related applications, mostly flame spread rates are analyzed to increase or decrease.However, complexity of the problem have prevented a complete understanding due to non-peculiar behavior of the flow, heat and mass transfer.

Present work investigates the magnets as potential burn rate modifiers. Experiments are conducted on diffusion flames under external magnetic influence to conclude if magnets can be utilized for combustion applications. An experimental setup is upraised and proper investigation is carried out with key controlling parameters viz., magnet separation distance, number and type of magnets, geometry and size of magnets.

The results are expected to offer good physical insight about the phenomenon and related implications. The results will be utilized as a part of scientific contribution for better fire safety applications.