

Abstract Submitted
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In Search of Reaction Rate Scaling Law for Supersonic Combustion FOLUSO LADEINDE, ZHIPENG LOU, Stony Brook University, Stony Brook, NY 11794-2300, WENHAI LI, TTC Technologies, Inc., Centereach, NY 11794-2300 — As a way of employing the flamelet approach, which was developed essentially for incompressible flows, to model supersonic combustion, the role ascribed to pressure has not been very convincing. That is, the reaction rate is often scaled on the square of the pressure in the finite Mach number flow field relative to the usually atmospheric static pressure field used in the generation of the flamelet library. This scaling assumption is quite simple and will therefore be very attractive if it has a sound theoretical basis and it works for a large selection of high-speed combustion flows. We try to find some justifications for different scaling laws, with the hope of coming up with a more universally-acceptable flamelet procedure for supersonic combustion.

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