

5F08: USING A STRAINED FLAME MODEL TO COLLAPSE DYNAMIC MODE DATA IN A SWIRL-STABILIZED SYNGAS COMBUSTOR.

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Do you think the steady calculation of the strained flame is enough for modeling the dynamic flame? Or, do you think some unsteady calculation, like [1,2] is needed?

[1] Stahl, J. Warnatz, *Combust. Flame* 85 (1991) 285–299.
[2] Sung, C.K. Law, *Combust. Flame* 123 (2000) 375–388.

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The correlation developed in our paper gives satisfactory results with a single constant strain rate. The flames we observe experimentally are undoubtedly subject to unsteadiness, but it is not clear on what physical basis one would choose the parameters of the imposed oscillations. As shown in Fig. 15 of the paper by Sung and Law, the consumption speed of a premixed flame oscillating at 100 Hz does not deviate substantially from the steady-state baseline. Furthermore, as noted in [1] periodic oscillations in the strain rate have little effect on the average burning velocities. For these reasons, we expect that imposing oscillations at the experimentally observed oscillation frequency would have little effect.

[1] Petrov, A.F. Ghoniem, *Combust. Flame*, 102 (1995) 401–417.