

Sooting Flames # 2

These flames have been investigated by two groups.

Apparatus

The flames were produced by a 60 mm diameter water-cooled porous-plate laminar premixed

- Soot volume fraction
- Primary particle diameter

=2.64 (C/O=0.88) – Fuel: 15.60 % - O₂: 17.73 % - N₂: 66.67 %

- Temperature profiles
- Velocity profiles
- Species profiles (CO, CO₂, H₂O, C₂H₄, C₂H₂, CH₄, H₂, CH*)
- Soot volume fraction
- Primary particle diameter

=2.94 (C/O=0.98) – Fuel: 17.0 % - O₂: 17.4 % - N₂: 65.6 %

- Velocity profiles
- Species profiles (CO, CO₂, H₂O, C₂H₄, C₂H₂, CH₄, H₂)
- Soot volume fraction
- Primary particle diameter

Notes

The temperatures measured by Xu & Faeth are larger than the adiabatic flame temperatures (by 200 or 300K) and should not be used.

The velocity measurements in Ref 1 suggest possible buoyancy and 2D effects.

References

1. F. Xu, P.B. Sunderland, G.M. Faeth, *Combust. Flame* 108 (1997) 471–493.
2. A.V. Menon, S. Y. Lee, M.J. Linevsky, T.A. Litzinger, R.J. Santoro, *Proc. Comb. Inst.* 31 (2007) 593–601.