

# Towards Distributed Burning in Turbulent Premixed Flames

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## Conditional means of species mass fraction from methane flames

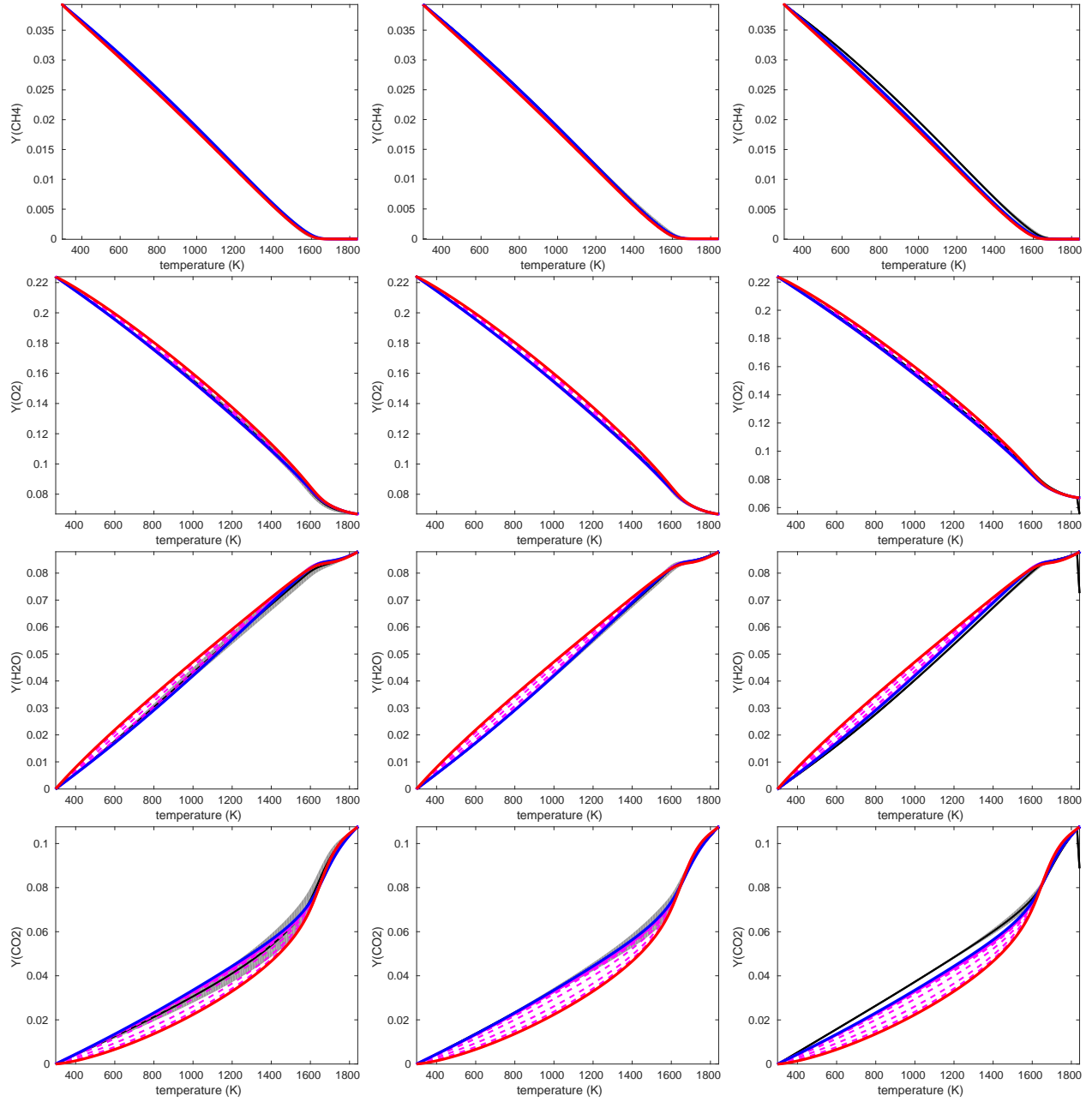


Figure 1: Conditional means of species mass fractions for methane flames at  $Ka = 108, 974$ , and  $8767$ .

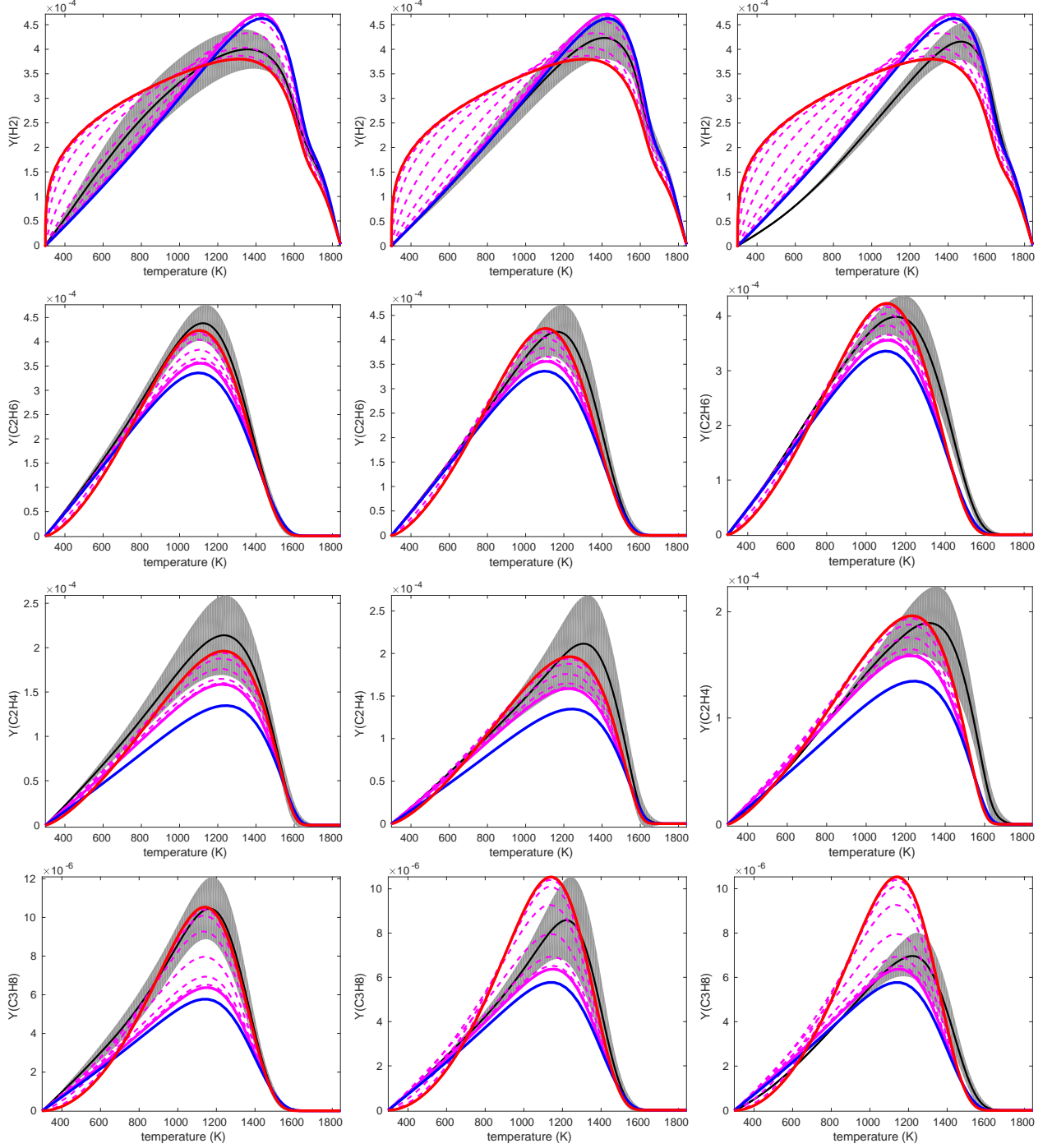


Figure 2: Conditional means of species mass fractions for methane flames at  $Ka = 108, 974$ , and  $8767$ .

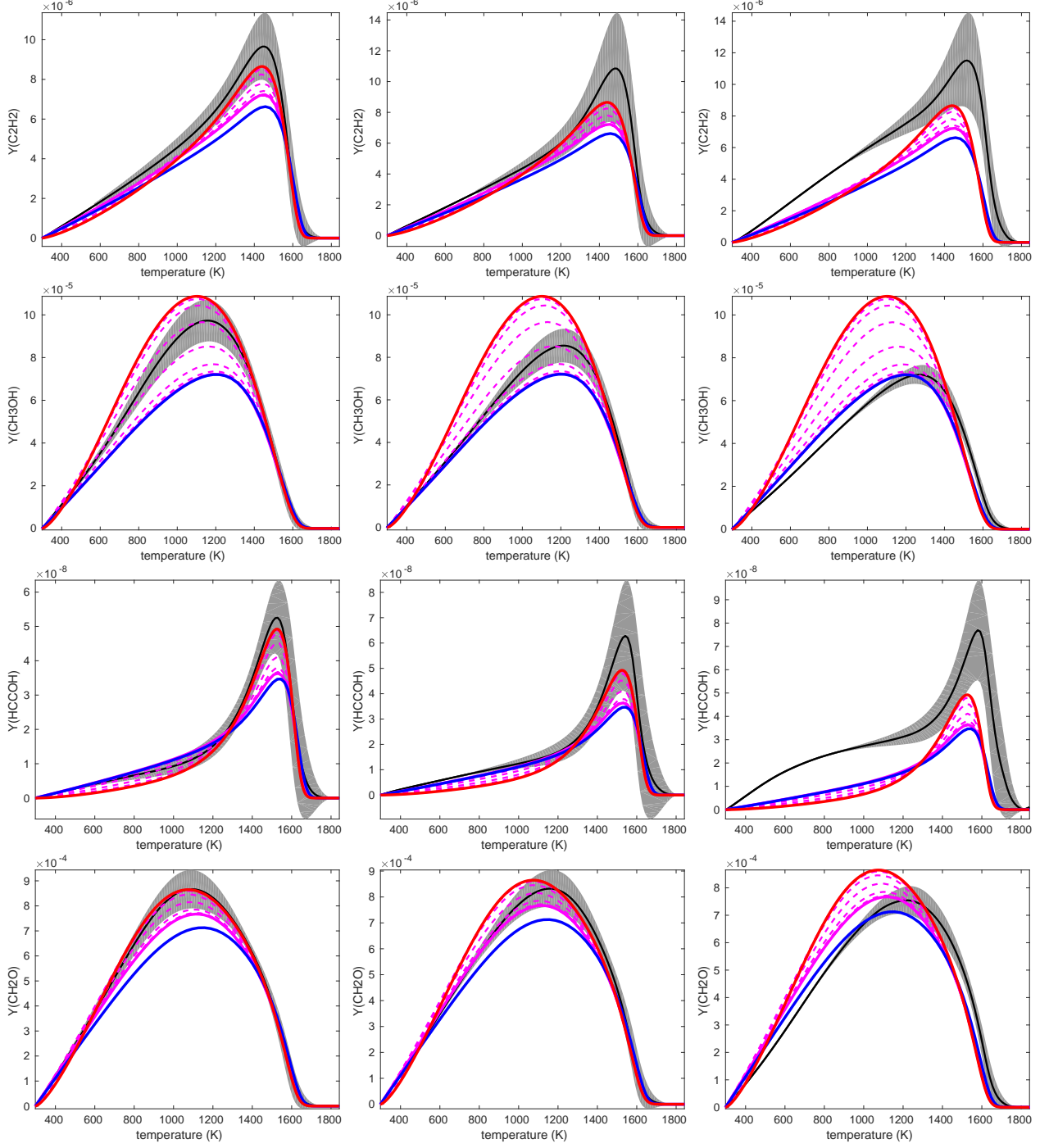


Figure 3: Conditional means of species mass fractions for methane flames at  $Ka = 108, 974$ , and  $8767$ .

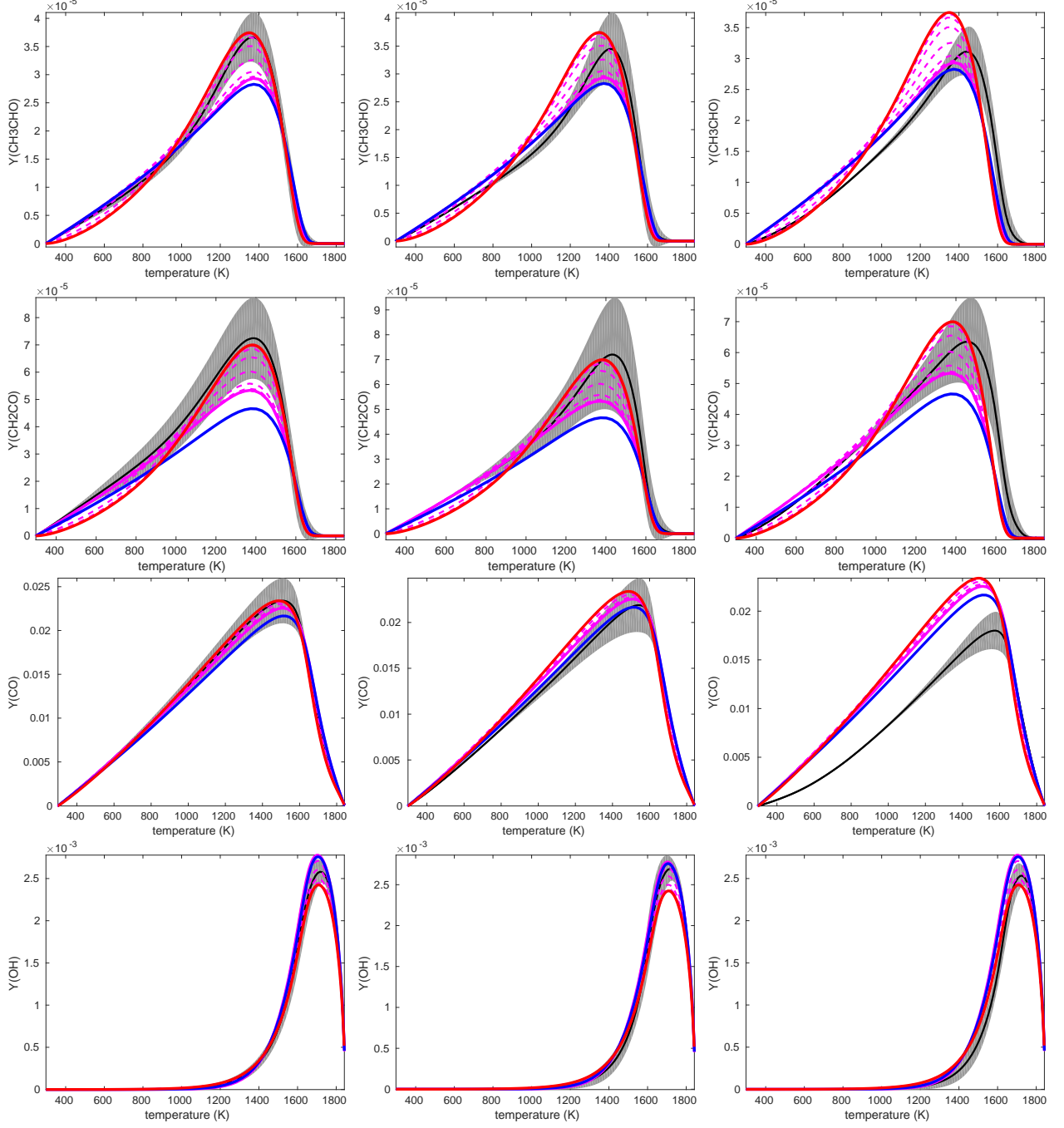


Figure 4: Conditional means of species mass fractions for methane flames at  $Ka = 108, 974$ , and  $8767$ .

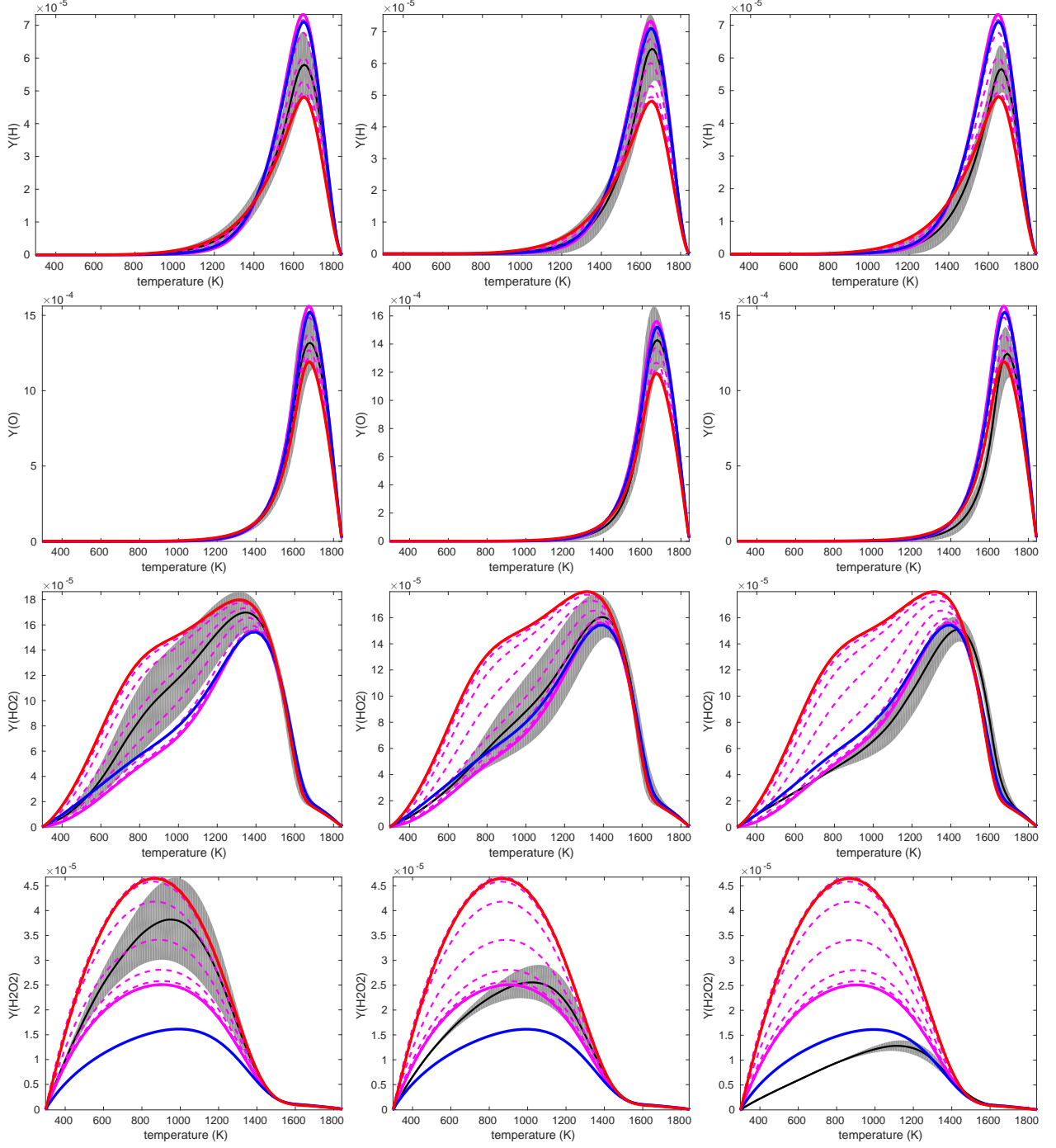


Figure 5: Conditional means of species mass fractions for methane flames at  $Ka = 108, 974$ , and  $8767$ .

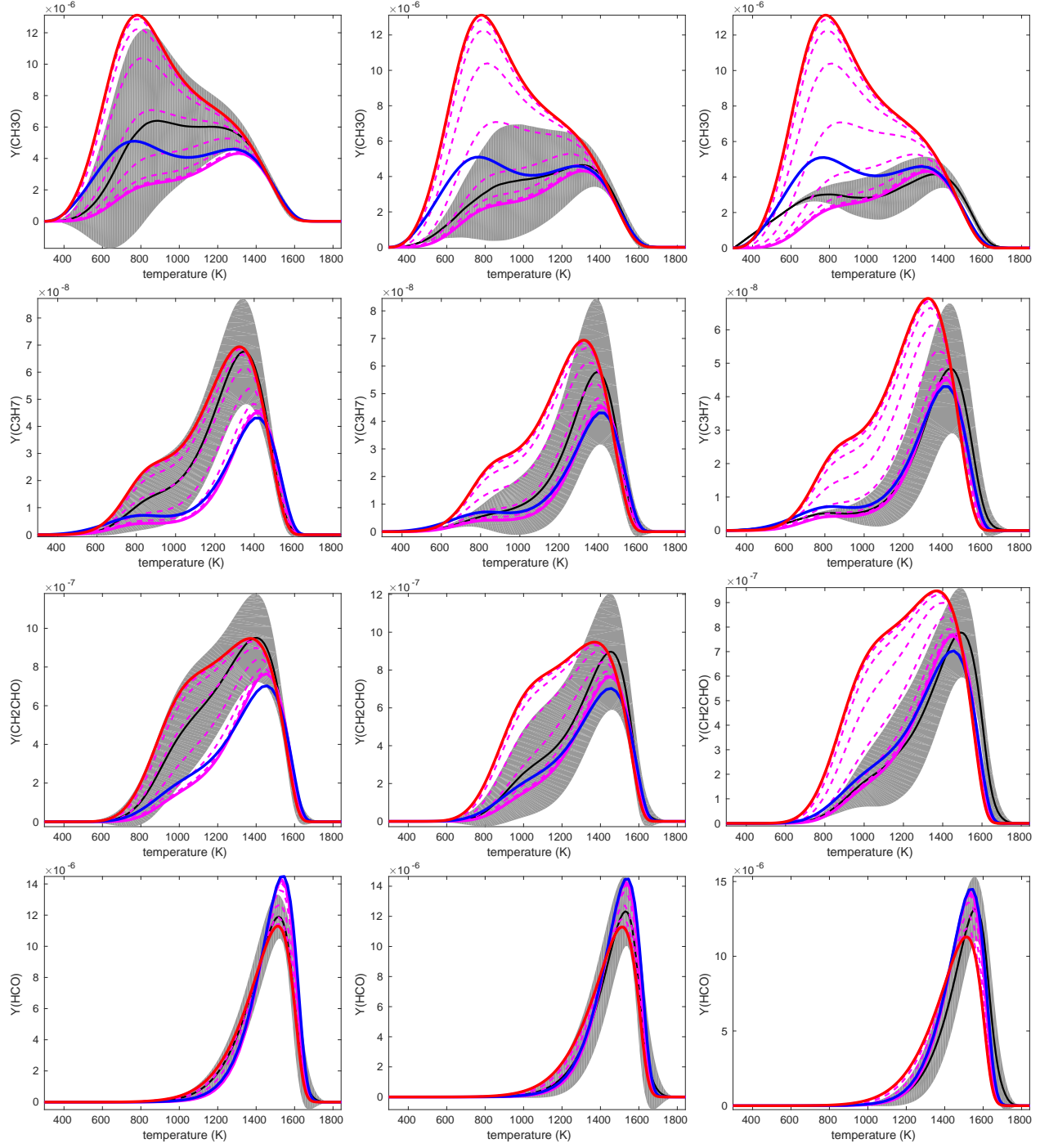


Figure 6: Conditional means of species mass fractions for methane flames at  $Ka = 108, 974$ , and  $8767$ .

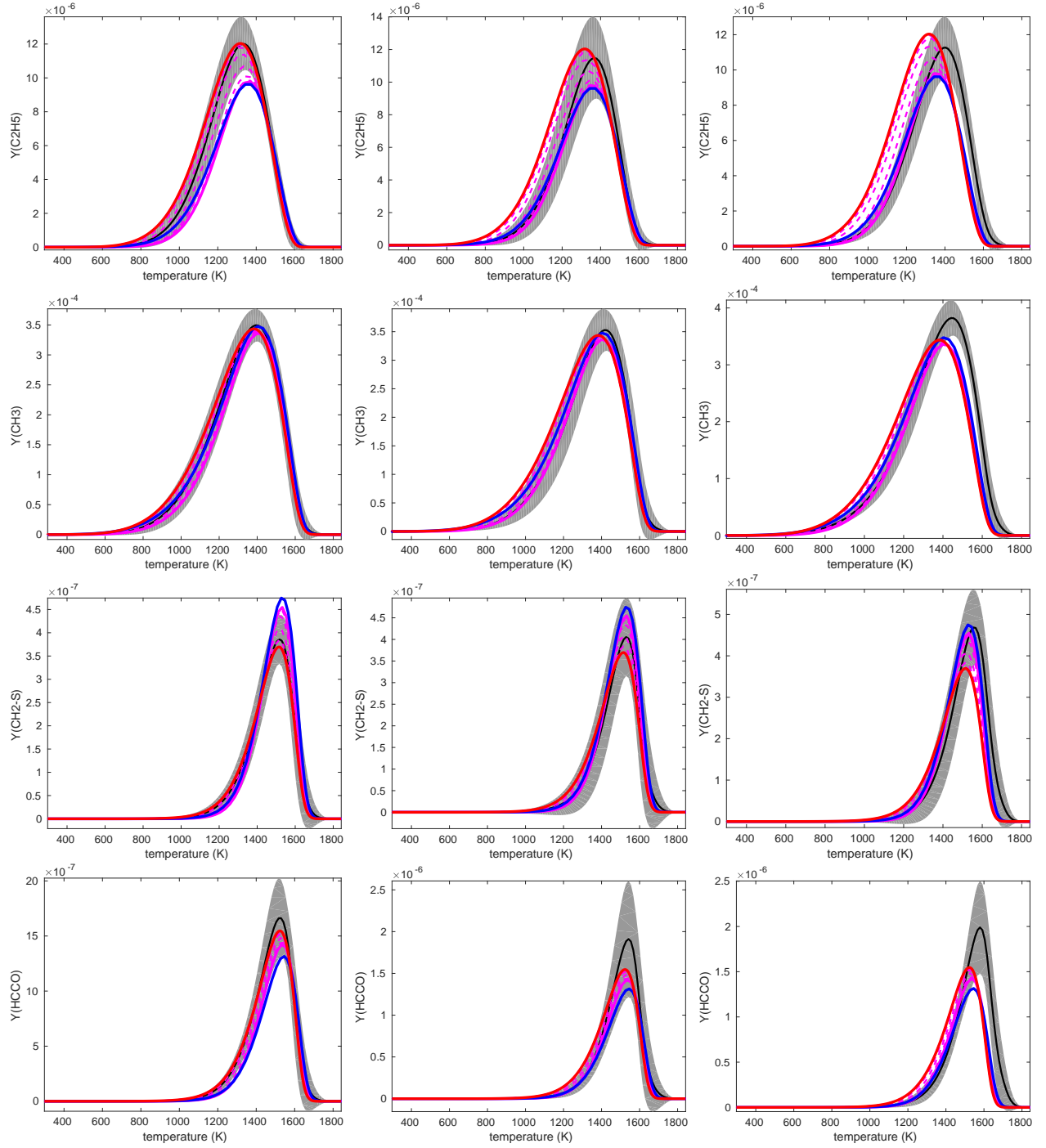


Figure 7: Conditional means of species mass fractions for methane flames at  $Ka = 108, 974$ , and  $8767$ .

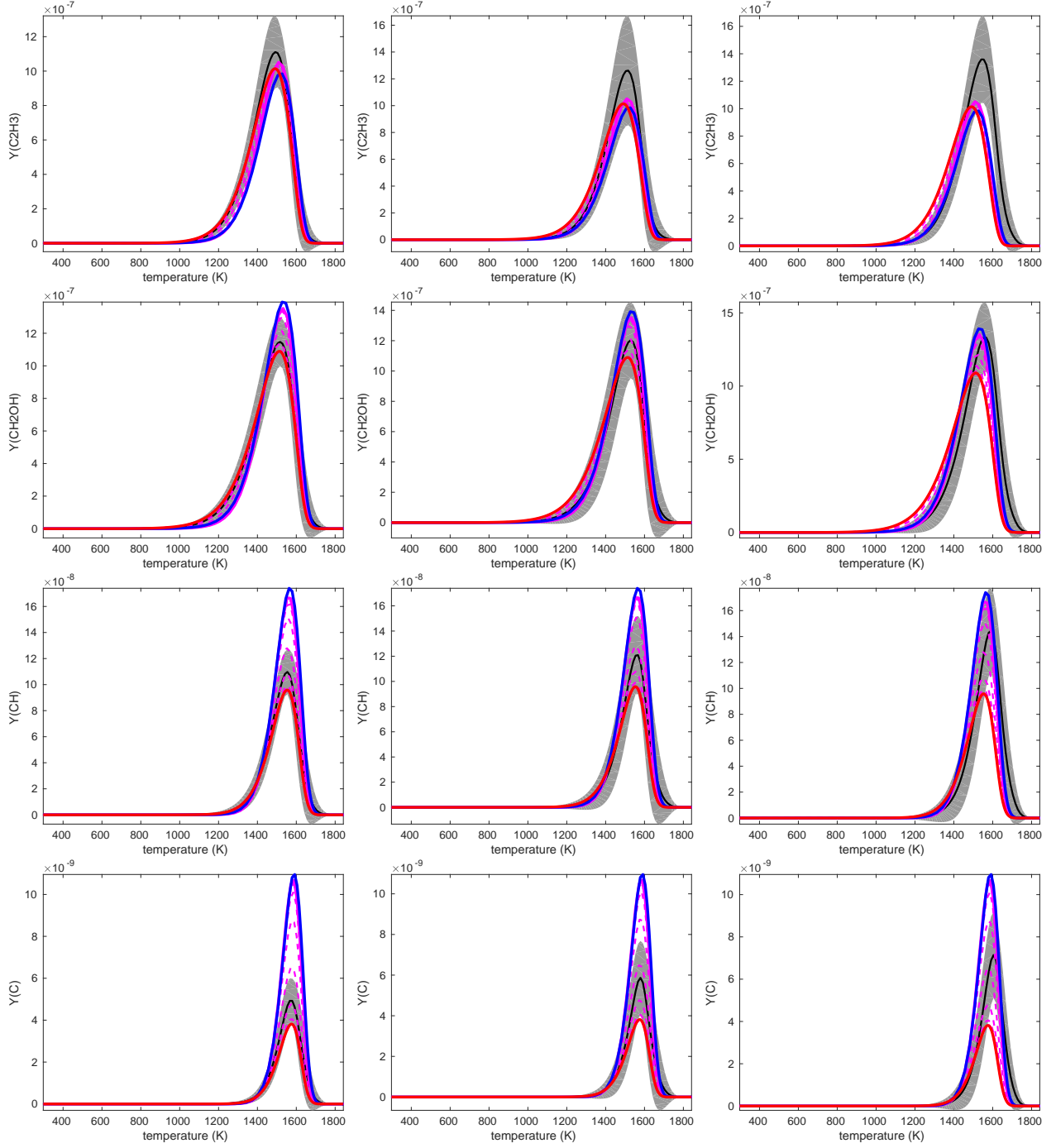


Figure 8: Conditional means of species mass fractions for methane flames at  $Ka = 108, 974, \text{ and } 8767$ .



# Conditional means of species mass fraction from hydrogen flames

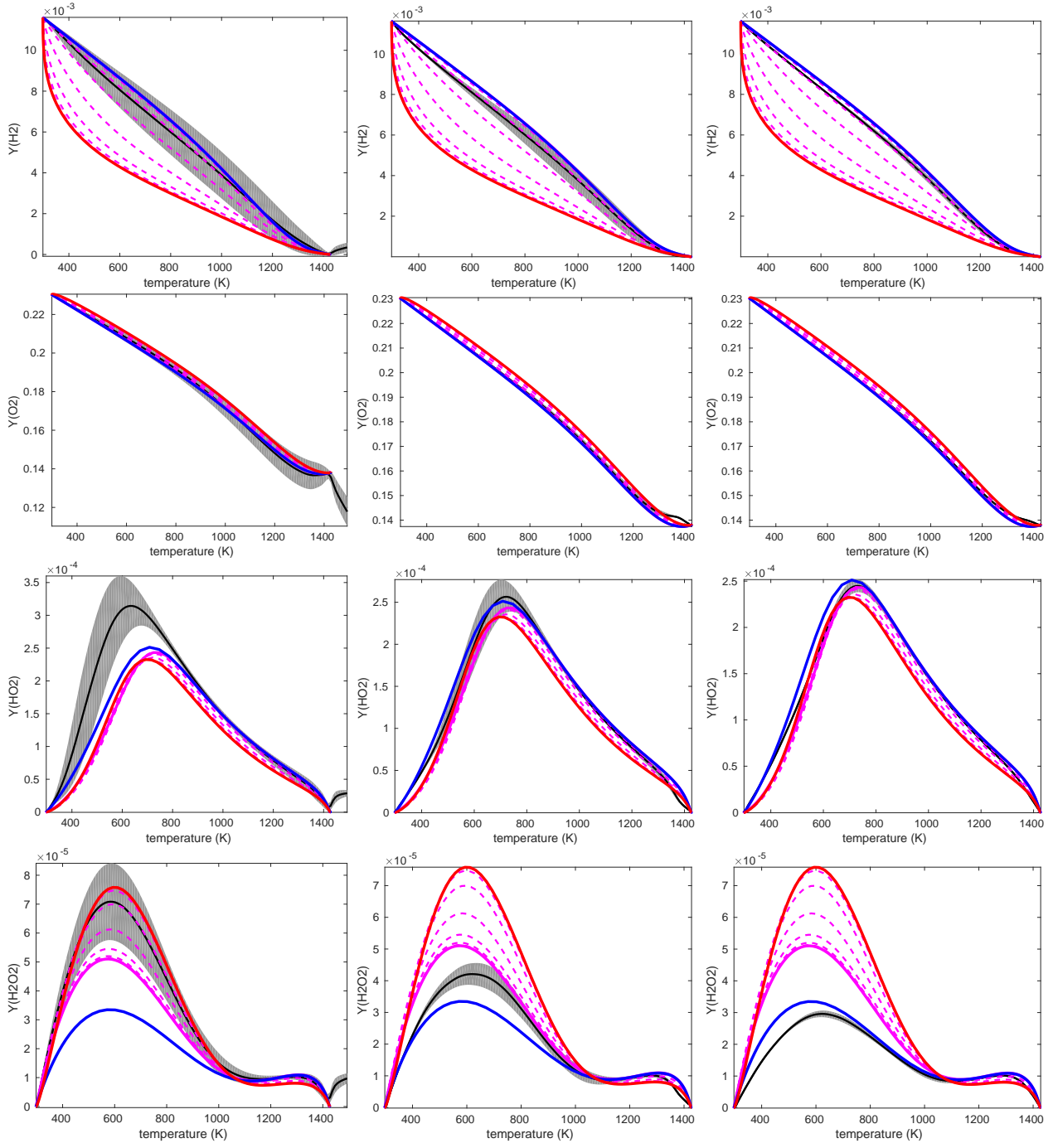


Figure 9: Conditional means of species mass fractions for hydrogen flames at  $Ka = 108$ ,  $974$ , and  $8767$ .

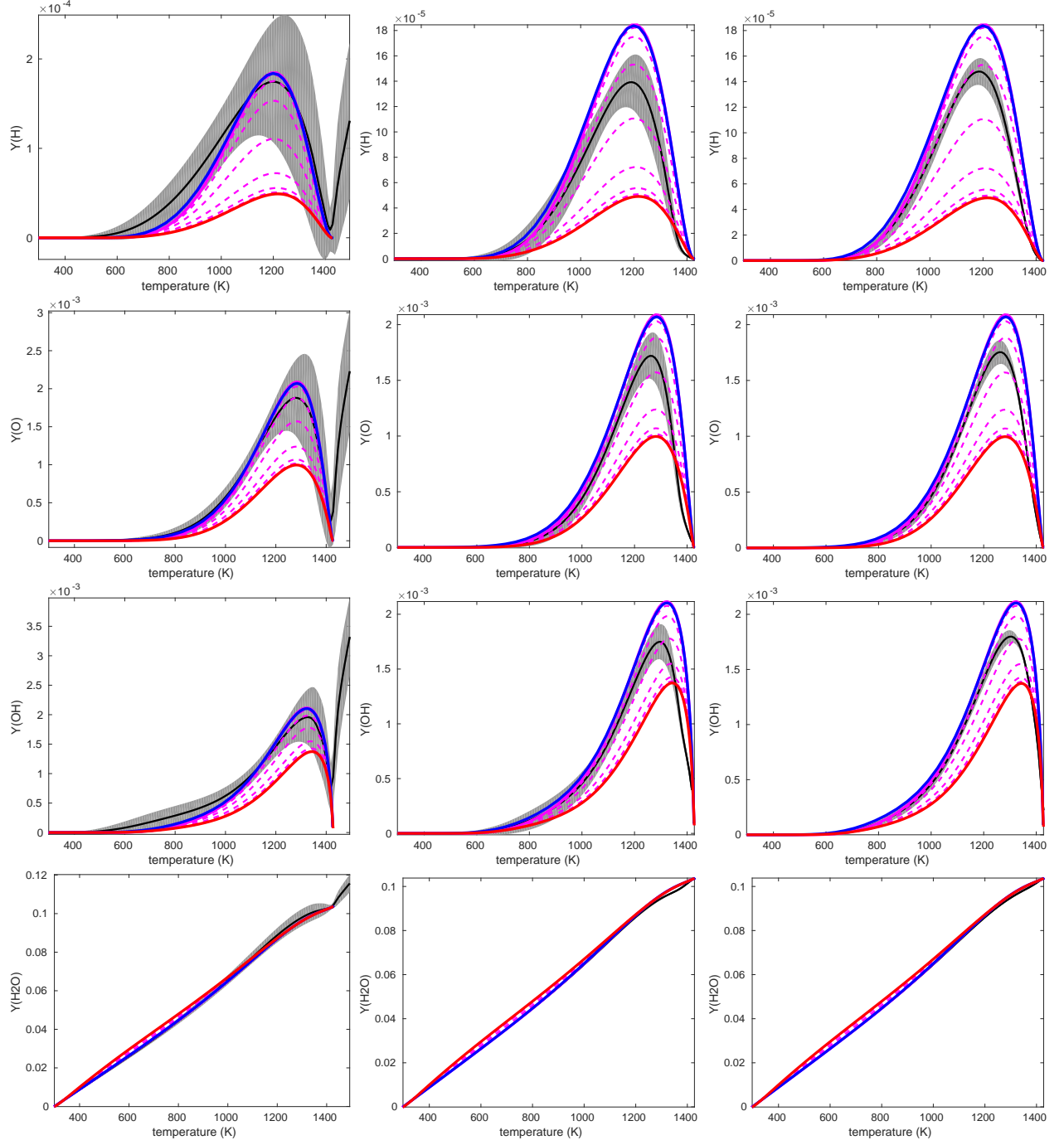


Figure 10: Conditional means of species mass fractions for hydrogen flames at  $Ka = 108$ , 974, and 8767; Part 2.

# Cantera study of flame properties as a function of $T$ , $p$ and $\varphi$

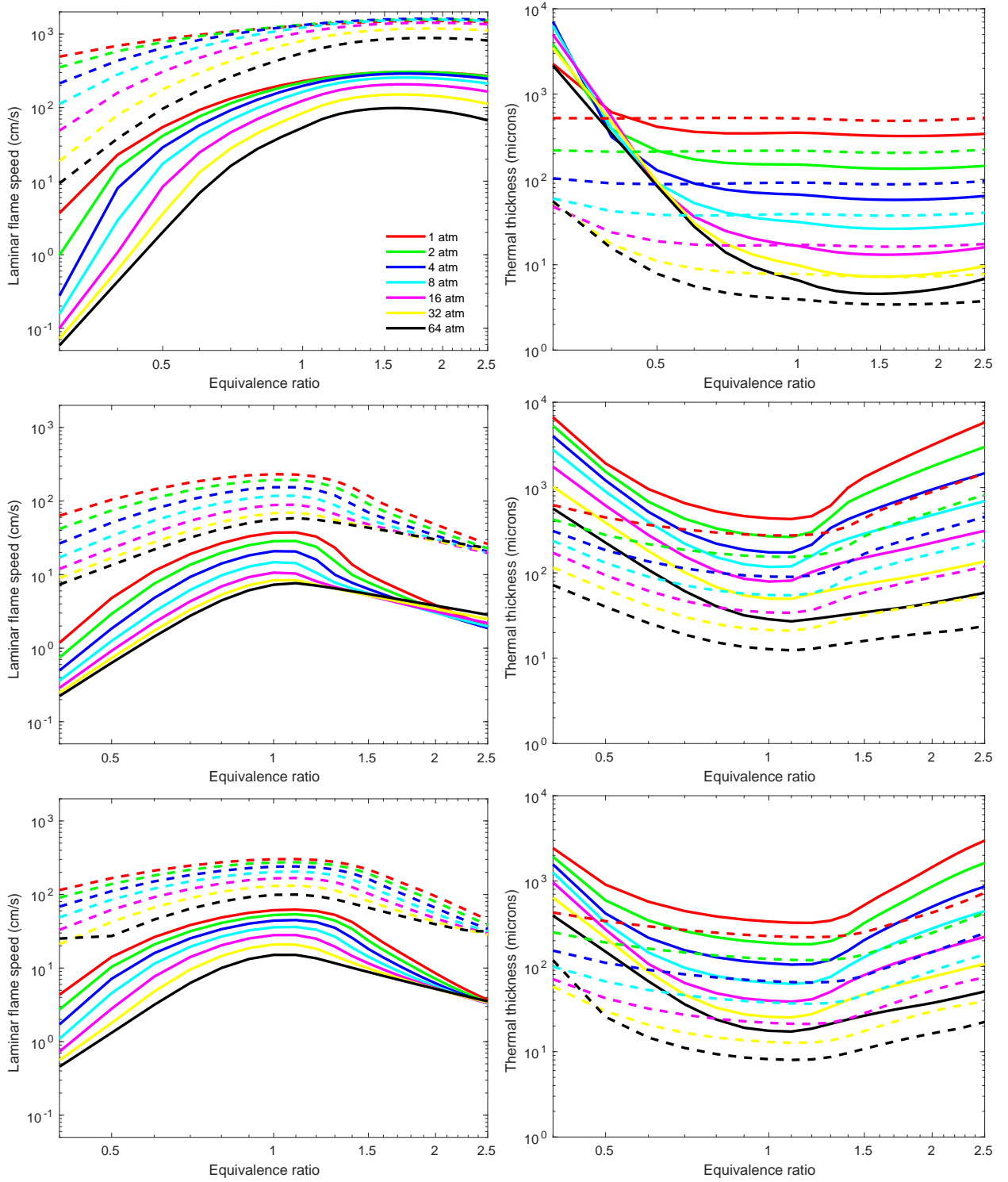


Figure 11: Laminar flame solutions obtained using cantera. Flame speed and thermal thickness as a function of equivalence ratio for hydrogen, methane and dodecane, respectively top-to-bottom; solid and dashed lines denote reactants at 300 K and 800 K, respectively.

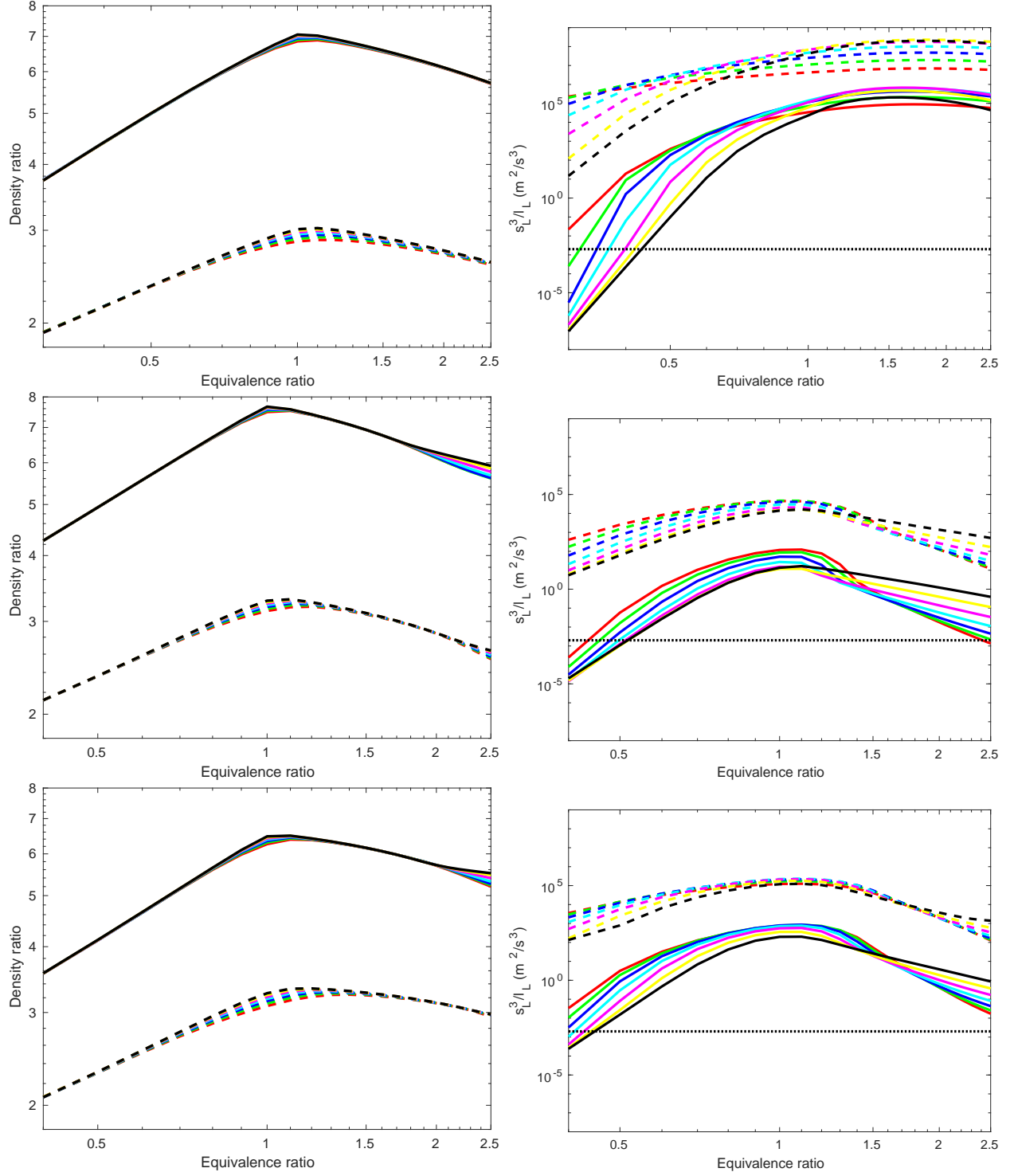


Figure 12: Laminar flame solutions obtained using cantera. Density ratio and  $s_L^3/l_F$  as a function of equivalence ratio for hydrogen, methane and dodecane, respectively top-to-bottom; solid and dashed lines denote reactants at 300 K and 800 K, respectively.