

ME419 Additional Problems

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Sorenson Text

Problem 3.11

Methane (CH₄) is combusted with air at an air excess ratio of 0.9 ($\lambda = 0.9$). Determine the coefficients of the chemical reaction equation a) using $H_2 = 0$ assumption, b) using $CO/H_2 = 2$, and c) using $K_p = 0.286$.

Problem 3.12

An unoxidized fuel (no oxygen) with unknown composition is combusted with air. The 'dry' exhaust products by volume (and hence %mole) are:

Species	% mole
CO ₂	10
CO	7
O ₂	1
H ₂	4
CH ₂	1

Determine the excess air ratio and the AF ratio assuming $x = 1$.