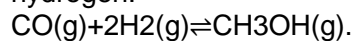


Question #81895, Chemistry / General Chemistry | for completion

Methanol (CH₃OH) is produced commercially by the catalyzed reaction of carbon monoxide and hydrogen:



An equilibrium mixture in a 2.50 L vessel is found to contain 0.0243 mol CH₃OH, 0.160 mol CO, and 0.301 mol H₂ at 500 K.

Calculate K_c at this temperature.

Answer:

$$C_{\text{CH}_3\text{OH}} = 0.0243 \text{ mol} / 2.5 \text{ L} = 0.00972 \text{ M};$$

$$C_{\text{CO}} = 0.16 \text{ mol} / 2.5 \text{ L} = 0.064 \text{ M};$$

$$C_{\text{H}_2} = 0.301 \text{ mol} / 2.5 \text{ L} = 0.1204 \text{ M};$$

$$\text{Formula: } K_c = C_{\text{CH}_3\text{OH}} / C_{\text{CO}} \times (C_{\text{H}_2})^2$$

$$K_c = 0.00972 / 0.064 \times (0.1204)^2 = 10.48$$

$$K_c = 10.48$$

Answer provided by AssignmentExpert.com