

Richteke, Prüfung 6, Vorgeard G. Jewell



$$X = 0.1 \quad r_{\text{CO}} = 4 \cdot 10^{-7} \frac{\text{mol}}{\text{g s}}$$

1a)

$$F_{A0} - F_A - r_A V = 0$$

$$\text{I)} \quad r_A = \frac{F_{A0} - F_A}{V} = \frac{X F_{A0}}{V}$$

$$\text{II)} \quad \frac{F_{\text{H}_2\text{O}}}{F_{\text{CO},0}} = 8$$

$$\text{III)} \quad p \phi_v = F_0 RT$$

$$\text{III)} \quad \phi_v = \frac{(F_{\text{CO},0} + F_{\text{H}_2\text{O}}) RT}{p}$$

$$\text{II)} \quad F_{\text{H}_2\text{O}} = 8 F_{\text{CO},0}$$

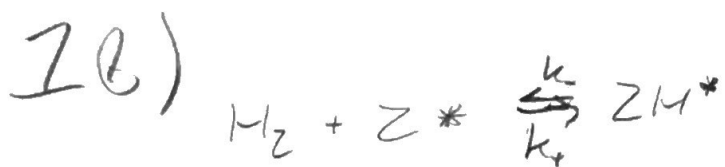
$$\text{III)} \quad \phi_v = \frac{9 F_{\text{CO},0} RT}{p}$$

$$\text{I)} \quad F_{\text{CO},0} = \frac{r_A V}{X}$$

$$\text{IV)} \quad SV := \frac{\phi_v}{V}$$

$$\text{I} \rightarrow \text{III} : \text{V)} \quad \phi_v = \frac{9 \left(\frac{r_A V}{X} \right) RT}{p}$$

$$\text{V} \rightarrow \text{IV} : \text{VI)} \quad SV = \frac{9 r_A RT}{X p} = 1,565 \cdot 10^{-6} \text{ s}^{-1}$$



I) $r_{\text{net}} = k_f P_{H_2} C_V^2$

II) $r_{\text{des}} = k_r C_{H^*}^2$

I+II: III) $r = k_f P_{H_2} C_V^2 - k_r C_{H^*}^2$

IV) $C_t = C_V + C_{H^*}$

IV $\rightarrow$ III: V) $r = k_f P_{H_2} (C_t - C_{H^*})^2 - k_r C_{H^*}^2$

Likvevikt: $r=0$, $k = \frac{k_f}{k_r}$

$$\rightarrow C_{H^*}^2 = k P_{H_2} (C_t - C_{H^*})^2$$

$$C_{H^*} = \sqrt{k P_{H_2}} (C_t - C_{H^*})$$

$$C_{H^*} (1 + \sqrt{k P_{H_2}}) = \sqrt{k P_{H_2}} C_t$$

$$\frac{1}{C_{H^*}} = \frac{1}{\sqrt{k P_{H_2}} C_t} + \frac{1}{C_t}$$

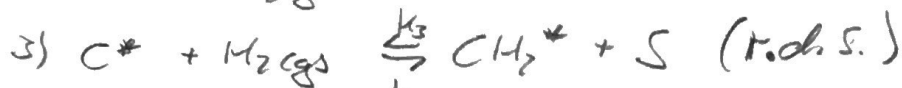
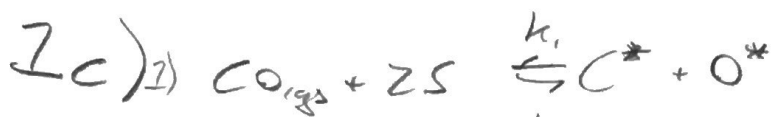
$$\frac{1}{C_{H^*}} = \frac{1}{C_t} + \frac{1}{\sqrt{k} C_t} \frac{1}{\sqrt{P_{H_2}}}$$

$n_{H_2} = \frac{P V_{H_2}}{RT}$, Skaleres Sinn at C_{H^*} er i $\frac{\text{mol}}{\text{gkat}}$

og P_{H_2} er i Pa. plottes $\frac{1}{C_{H^*}}$ mot $\frac{1}{\sqrt{P_{H_2}}}$ (vedlagt)

Før $\theta = \frac{1}{C_t} = 10489 \frac{\text{gkat}}{\text{mol}}$

$C_t = 9,5 \cdot 10^{-5} \frac{\text{mol}}{\text{gkat}}$ er konsentrasjonen av aktive steder



②, ③ og ④ er ved l. herald (PSSH):

$$I) 0 = k_1^+ P_{CO} C_v^2 - k_1^- C_{C^*} C_{O^*}$$

$$II) 0 = k_2^+ C_{O^*} P_{H_2} - k_2^- P_{H_2O_{(g)}} C_v$$

$$III) r = k_3^+ C_{C^*} P_{H_2} - k_3^- C_{CH_2^*} C_v$$

$$IV) 0 = k_4^+ C_{CH_2^*} P_{H_2} - k_4^- P_{CH_4} C_v$$

$$V) C_t = C_v + C_{C^*} + C_{O^*} + C_{CH_2^*}$$

$$VI) 1 = \theta_v + \theta_c + \theta_o + \theta_{CH_2}$$

$$\theta_i = \frac{C_i^*}{C_t} \cdot [C_i] = \frac{\text{mol}}{\text{g}_{\text{kat}}}$$

$$IV) \theta_{CH_2} = \frac{P_{CH_4} \theta_v}{P_{H_2} k_4}, \quad k_i = \frac{k_i^+}{k_i^-}$$

$$II) \theta_o = \frac{P_{H_2O} \theta_v}{P_{H_2} k_2}$$

$$II \rightarrow I: VI) 0 = k_1^+ P_{CO} \theta_v^2 - k_1^- \theta_c \left(\frac{P_{H_2O} \theta_v}{P_{H_2} k_2} \right)$$

$$VII) \theta_c = \frac{P_{CO} \theta_v}{P_{H_2O} P_{H_2} k_2 k_1}$$

$$IV, II, VI \rightarrow V: VIII) 1 = \theta_v + \theta_v \left(\frac{P_{CO} P_{H_2}}{P_{H_2O}} k_1 k_2 + \frac{P_{H_2O}}{P_{H_2} k_2} + \frac{P_{CH_4}}{P_{H_2} k_4} \right)$$

$$VII) \theta_v = \left(1 + \frac{P_{CO} P_{H_2}}{P_{H_2O}} k_1 k_2 + \frac{P_{H_2O}}{P_{H_2} k_2} + \frac{P_{CH_4}}{P_{H_2} k_4} \right)^{-1}$$

$$IV, VI, VII \rightarrow III: VIII)$$

$$VIII) r_{C_t} = \left(k_3^+ \frac{P_{CO} P_{H_2}^2}{P_{H_2O}} k_1 k_2 - k_3^- \frac{P_{CH_4}}{P_{H_2} k_4} \theta_v \right) \theta_v$$

← dette kan
holdt sikkert
Forsiklet
videre...