

# ELEKTROKÉMIA

*Dr. Inzelt György*  
*egyetemi tanár*



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Adszorpció, elektroszorpció, kemisorpció,  
előleválás (underpotential deposition, upd)

Langmuir -izoterma

$$\frac{\Theta_{\text{B}}}{1 - \Theta_{\text{B}}} = \frac{\Gamma_{\text{B}}}{\Gamma_{\text{B,T}} - \Gamma_{\text{B}}} = b_{\text{B}} c_{\text{B}}$$

$$\Theta_{\text{B}} = \frac{\Gamma_{\text{B}}}{\Gamma_{\text{B,T}}} = \frac{b_{\text{B}} c_{\text{B}}}{1 + b_{\text{B}} c_{\text{B}}}$$

$$b_{\text{B}} = \frac{k_{\text{a}}^{\text{B}}}{k_{\text{d}}^{\text{B}}} = \exp \left( - \Delta G_{\text{B,ads}}^0 / RT \right)$$

Tyomkin (Temkin) -izoterma

$$\Delta G_{\text{B,ads}}^0(\Theta) = \Delta G_{\text{B,ads}}^{\text{m}} + r \Theta$$

$$\frac{\Theta_{\text{B}}}{1 - \Theta_{\text{B}}} = b_{\text{B}}^{\text{m}} c_{\text{B}} \exp[-2 r \Theta_{\text{B}} / RT]$$

$$\Theta_{\text{B}} = \frac{RT}{2 r} \ln b_{\text{B}}^{\text{m}} + \frac{RT}{2 r} \ln c_{\text{B}}$$

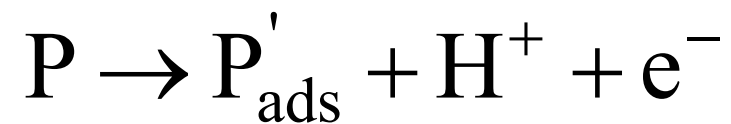
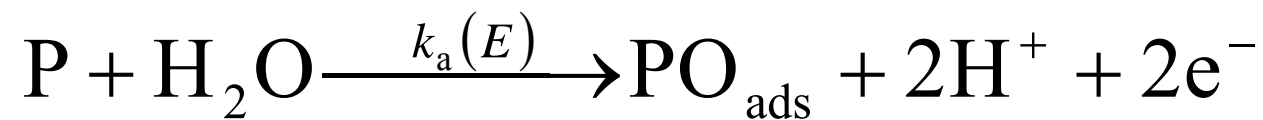
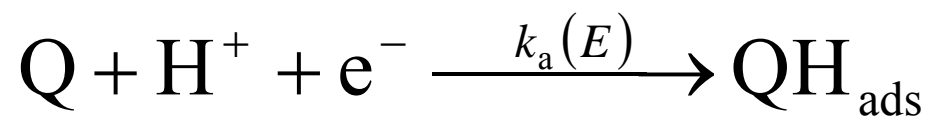
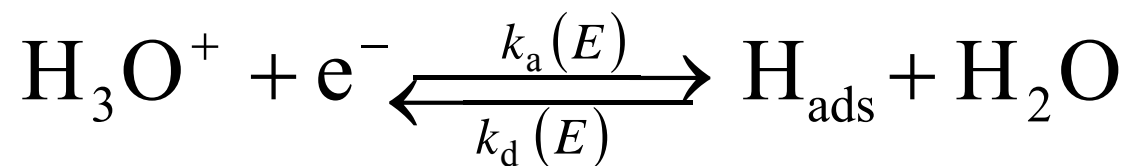
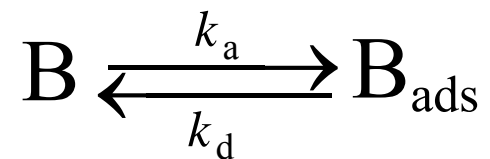
Frumkin -izoterma

$$\frac{\Theta}{1 - \Theta} = b_{\text{B}} a_{\text{B}} \exp(-2 g \Theta)$$

$$\Theta = \frac{b_{\text{B}} a_{\text{B}} \exp(-2 g \Theta)}{1 + b_{\text{B}} a_{\text{B}} \exp(-2 g \Theta)}$$

$$\frac{\Theta_{\text{B}}}{1 - \Theta_{\text{B}}} = b_{\text{B}} c_{\text{B}} \exp\left[\pm \frac{F}{RT} (E - E_0^{\text{B}})\right]$$

Adszorpció koncentráció- és potenciálfüggése



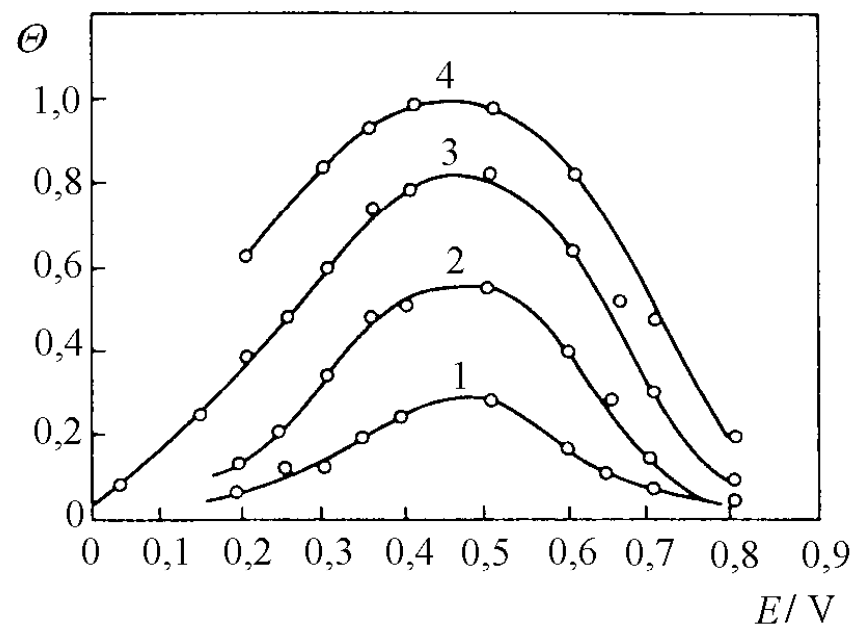
$$\nu_{\text{a}} = \nu_{\text{d}} + \nu_{\text{o}} + \nu_{\text{r}}$$

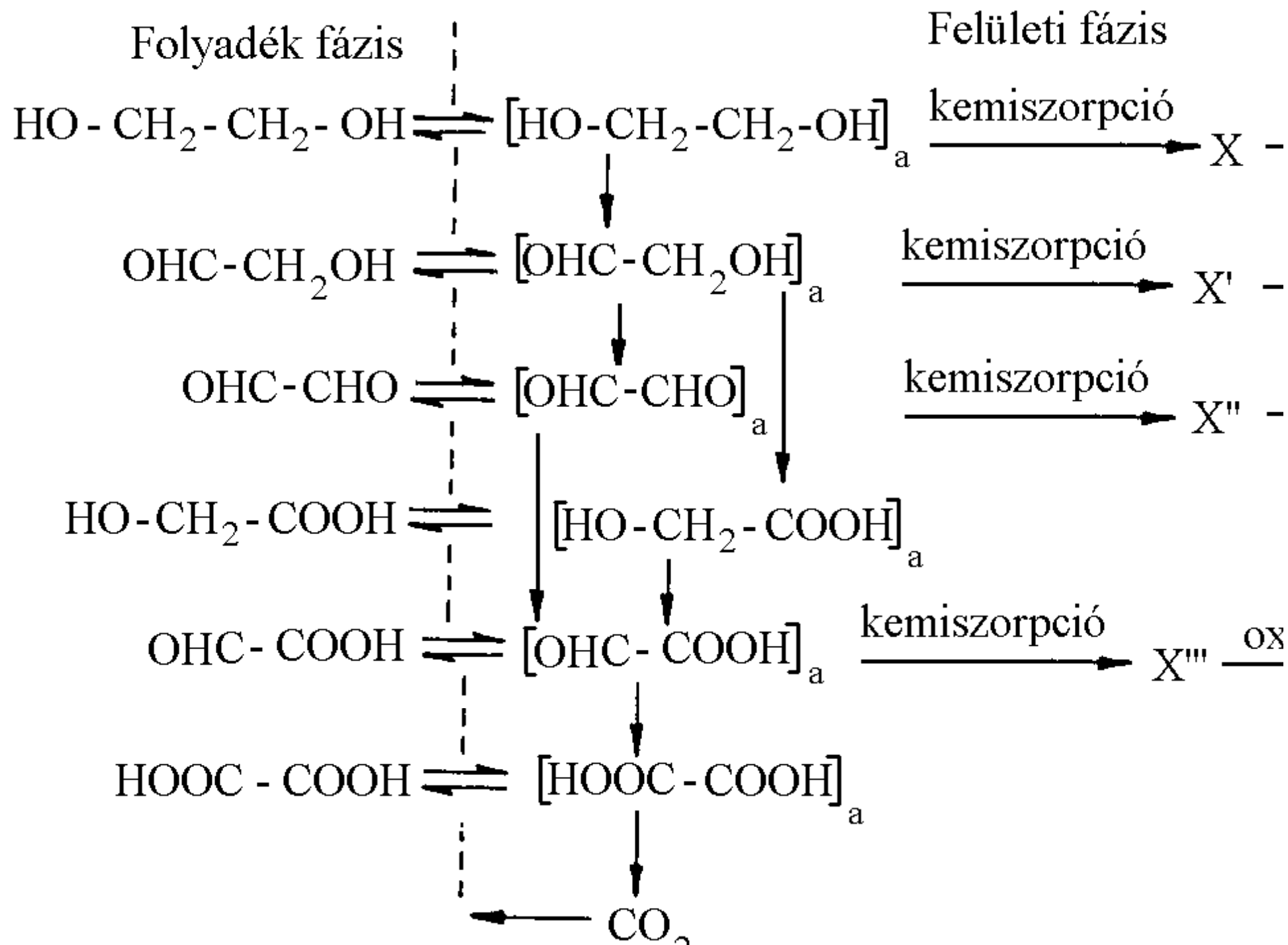
$$\Theta = \frac{k_{\text{a}}c}{k_{\text{a}}c + k_{\text{d}} + k \exp \left[ b_{\text{o}} \left( E - E_0^{\text{o}} \right) \right] + k \exp \left[ -b_{\text{r}} \left( E - E_0^{\text{r}} \right) \right]}$$



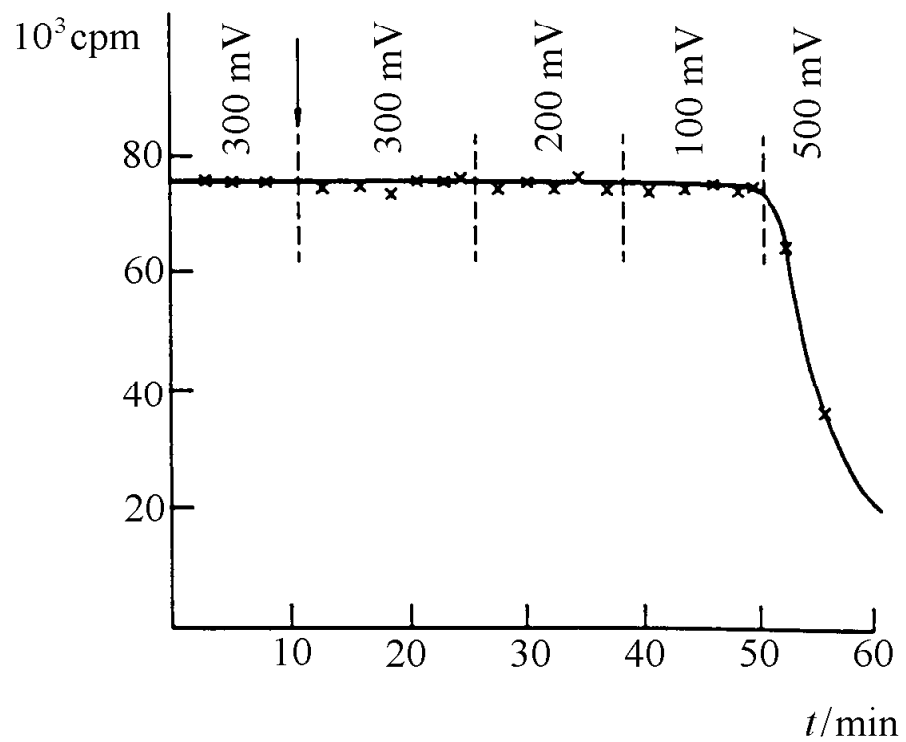
$$E_{\text{max}} = \frac{\ln(b_{\text{r}} / b_{\text{o}}) + b_{\text{r}} E_0^{\text{r}} + b_{\text{o}} E_0^{\text{o}}}{b_{\text{o}} + b_{\text{r}}}$$

# Metanol, savas közeg (Bockris)

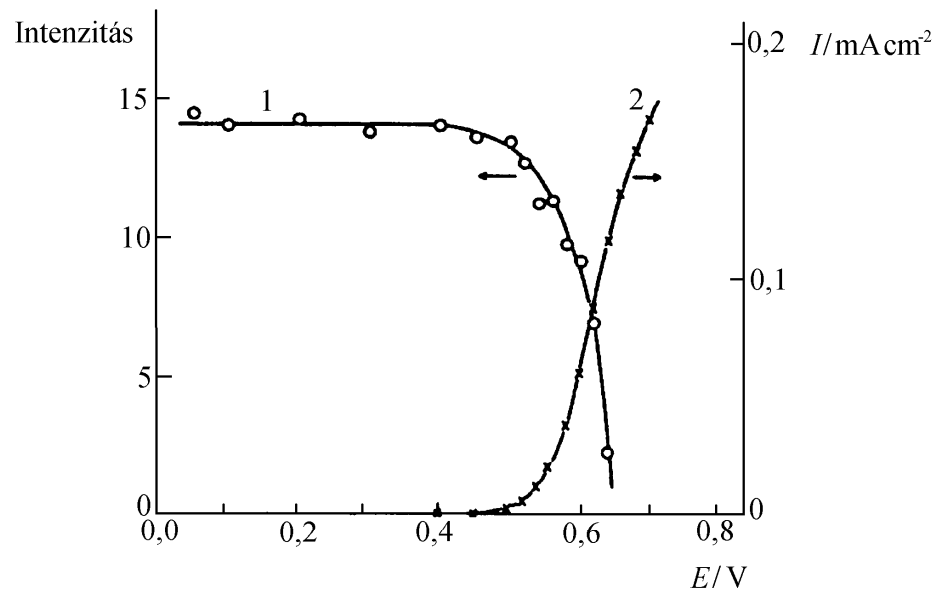


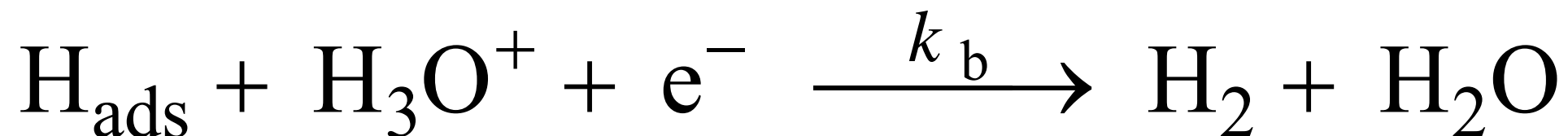
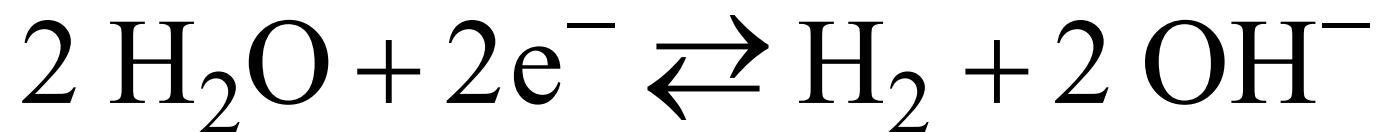
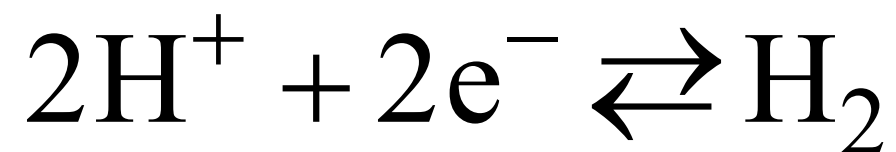


# Metanol ( $^{14}\text{C}$ ) kemisorpció, Pt savas közeg



Infravörös reflexiós-abszorpciós spektrum (IRRAS)  $\text{CO}_{\text{ads}}$   
species elnyelése (1), áram (2)  
Metanol, savas közeg





$$\Theta_{\text{H}} = \frac{k_{\text{a}} c_{\text{H}^+} \exp\left[-\frac{F\eta}{2RT}\right]}{k_{\text{a}} c_{\text{H}^+} \exp\left[-\frac{F\eta}{2RT}\right] + k_{\text{d}} \exp\left[\frac{F\eta}{2RT}\right] + k_{\text{b}} c_{\text{H}^+} \exp\left[-\frac{F\eta}{2RT}\right]}$$

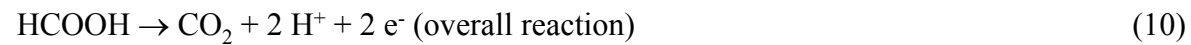
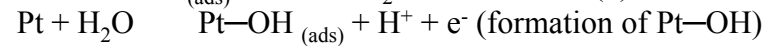
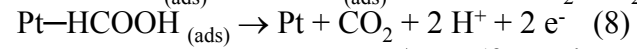
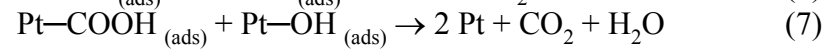
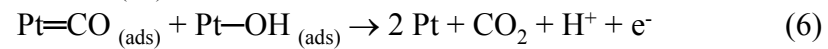
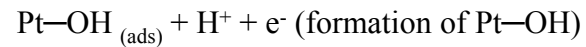
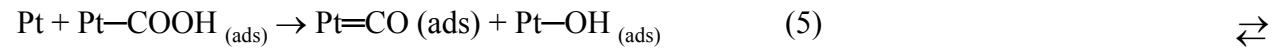
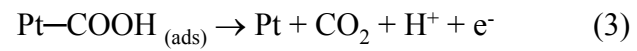
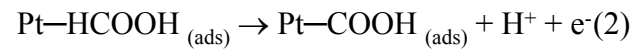
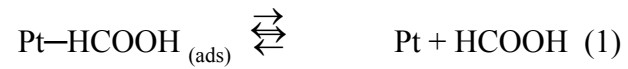
$$v_a = k_a c_{\text{H}^+} \exp(-\alpha_c f \eta)$$

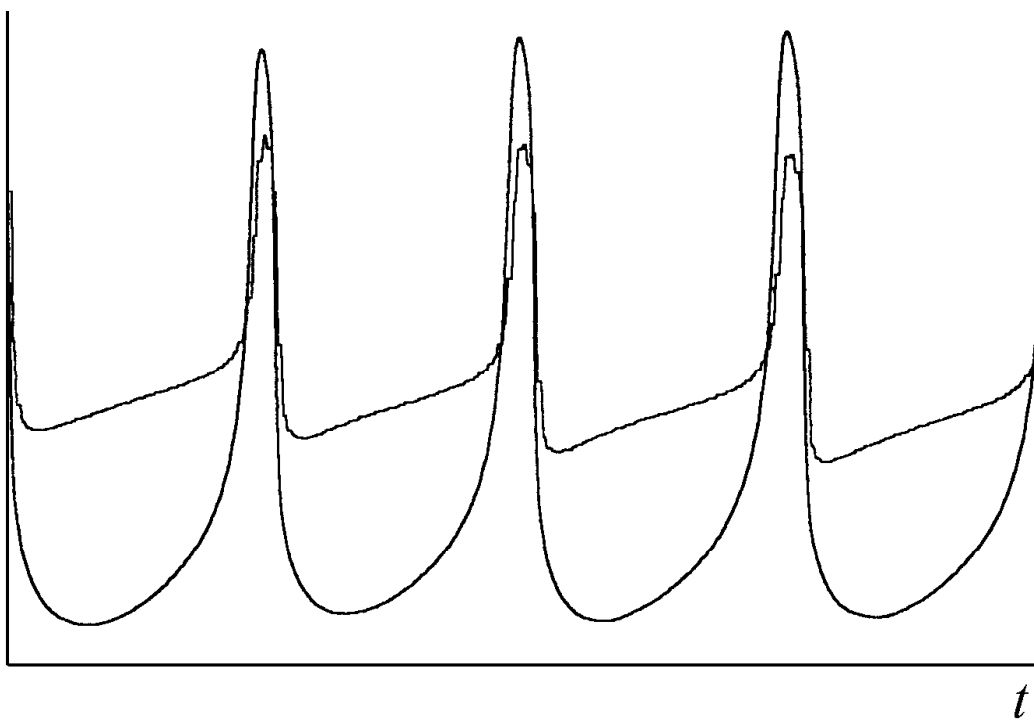
$$b_c = \left( \partial \eta / \partial \lg j \right)_{c_{\text{H}^+}} = -2RT / F = 118 \text{ mV} / \text{dekád} \left( 25^\circ \text{C} - \text{on} \right)$$

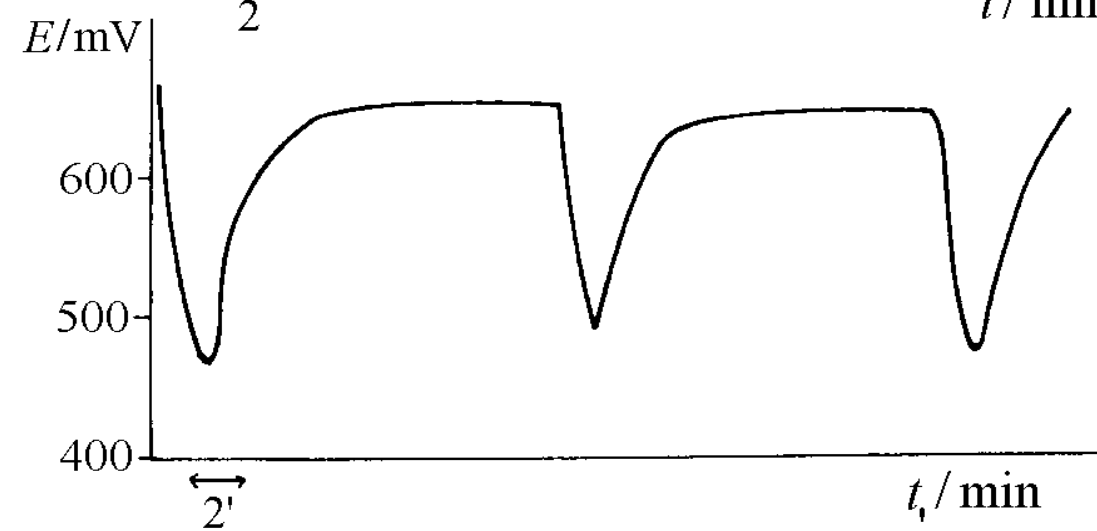
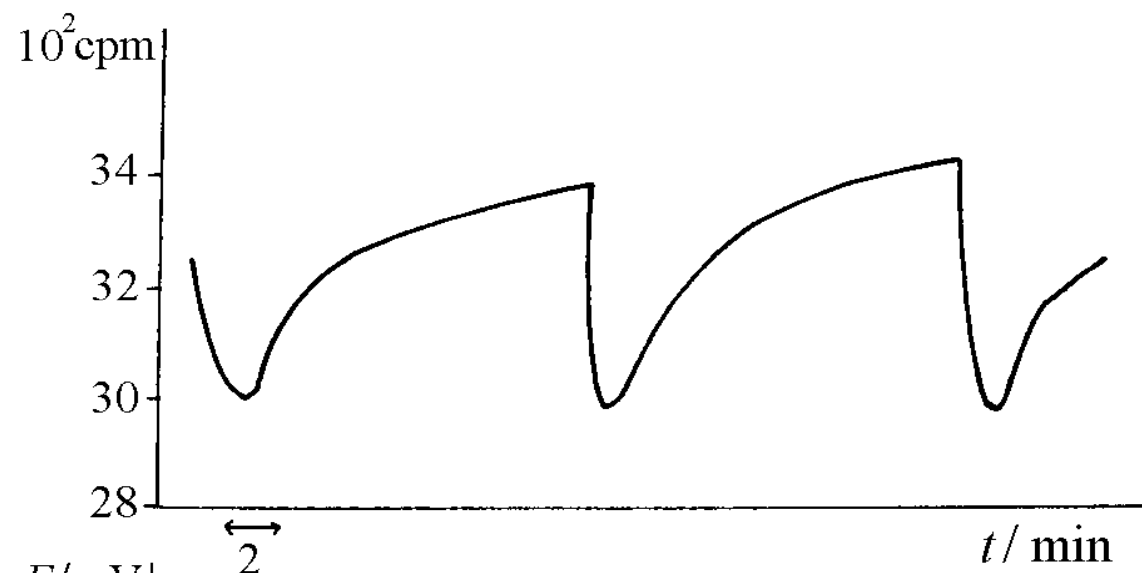
$$v_c = k_c K_a^2 c_{\text{H}^+}^2 \exp \left[ -F \eta / 2 RT \right]$$



$$I = I_1 (E, t) + I_2 (E, t) + I_3 (E, t) + C \frac{\partial E}{\partial t}$$







$$I = \frac{n^2 F^2}{RT} \frac{v A \Gamma (b_o \Gamma_{o,T} / b_R \Gamma_{R,T}) \exp \left[ (nF / RT) (E - E^{0'}) \right]}{\left\{ 1 + (b_o \Gamma_{o,T} / b_R \Gamma_{R,T}) \exp \left[ (nF / RT) (E - E^{0'}) \right] \right\}^2}$$

# Előleválás

