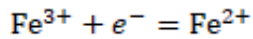


### Příklad 1



	G
Fe <sup>2+</sup>	-91504 J/mol
Fe <sup>3+</sup>	-17238 J/mol

R =	8.31446
T =	298.15
ln 10 =	2.303
F =	96485.33
2.303 RT/F	0.059159

### Řešení

$$\Delta G_r^{\circ} = G_{\text{Fe}^{2+}}^{\circ} - G_{\text{Fe}^{3+}}^{\circ} - G_{e^{-}}^{\circ} = -91\,504 - (-17\,238) - 0 = -74\,266 \text{ J mol}^{-1}$$

$$\Delta G_r^{\circ} = 74266$$

$$E^{\circ} = \frac{-\Delta G_r^{\circ}}{nF}$$

$$E^{\circ} = 0.7697 \text{ V}$$

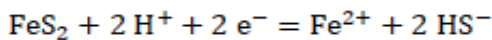
$$E^{\circ} = 769.7 \text{ mV}$$

### Příklad 2

složka	G°	
pyrit	-160217.91	J/mol
H+	0	J/mol
e-	0	J/mol
Fe <sup>2+</sup>	-91504.08	J/mol
HS-	11966.24	J/mol

### Řešení

#### Standardní potenciál



$$\Delta G_r^{\circ} = G_{\text{Fe}^{2+}}^{\circ} + 2G_{\text{HS}^{-}}^{\circ} - G_{\text{pyrit}}^{\circ} - 2G_{\text{H}^{+}}^{\circ} - 2G_{e^{-}}^{\circ}$$

$$\Delta G_r^{\circ} = -91504,08 + 2 \times 11966,24 - 160217,91 - 2 \times 0 - 2 \times 0 = 92646.31 \text{ J}$$

$$\Delta G_r^{\circ} = 92646.31$$

$$E^{\circ} = -0.480105666 \text{ V}$$

$$E^{\circ} = -480.1 \text{ mV}$$

Standardní redukční potenciál pro rovnováhu pyritu s podzemní vodou v anoxických podmínkách

#### Za rovnováhy

$$\log a_{\text{Fe}^{2+}} = -7.5618$$

$$\log a_{\text{HS}^{-}} = -7.5966$$

$$\text{pH} = 7.032$$

$$a_{\text{Fe}^{2+}} = a_{\text{HS}^{-}}^2$$

$$K = \frac{a_{\text{Fe}^{2+}} a_{\text{HS}^-}}{a_{\text{H}^+}^2 a_{\text{e}^-}^2}$$

$$\log K = \log a_{\text{Fe}^{2+}} + 2 \log a_{\text{HS}^-} - 2 \log a_{\text{H}^+} - 2 \log a_{\text{e}^-}$$

$$\log K = \log a_{\text{Fe}^{2+}} + 2 \log a_{\text{HS}^-} + 2 \text{pH} + 2 \text{p}\varepsilon$$

$$\text{p}\varepsilon = -\frac{1}{2} \log a_{\text{Fe}^{2+}} - \log a_{\text{HS}^-} - \text{pH} + \frac{1}{2} \log K$$

$$\log K = \frac{-\Delta G_r^\circ}{RT} = \frac{92646.31}{2,303 \times 8,314 \times 298,15} = -16,2309$$

$$\log K = -16.231$$

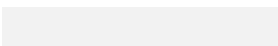
$$\text{p}\varepsilon = -3.770$$

$$E = \frac{2,303RT}{F} \text{p}\varepsilon$$

$$E = -0.2230 \text{ V}$$

$$E = -223.0 \text{ mV}$$

Za rovnováhy pyritu ve vodě bude redukční potenciál  $-223,0 \text{ mV}$ .



h je  $-480,1$  mV.