

Answer on Question #78399 - Chemistry - Physical Chemistry

Question:

Estimate the concentration of CO_3^{2-} ions, if potential of the electrode $\text{MnCO}_3/\text{Mn},\text{CO}_3^{2-}$ relatively to standard hydrogen electrode is -1.285 V. $E_{\text{MnCO}_3/\text{Mn},\text{CO}_3^{2-}} = -1.480$ V.

Solution:

$$E = E_0 + (0.059/n) \lg([\text{Ox}]/[\text{Red}])$$

$$-1.285 = -1.480 - (0.059/2) \lg x$$

$$\lg x = (1.480 - 1.285)/0.0295 = -6.61;$$

$$x = 2.45 \cdot 10^{-7};$$

Answer: $2.45 \cdot 10^{-7}$.