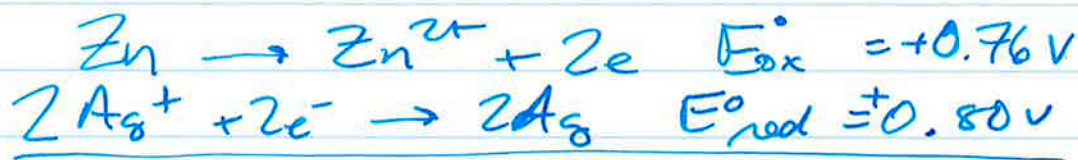


General Chemistry w/ Doc M

What reagents would oxidize Zn but not Pb?

Why doesn't Cu react with strong acids while most metals do?

Calculate E for $\text{Zn}|\text{Zn}^{2+} (1.0\text{M})||\text{Ag}^+ (0.040\text{M})|\text{Ag}$
anode cathode

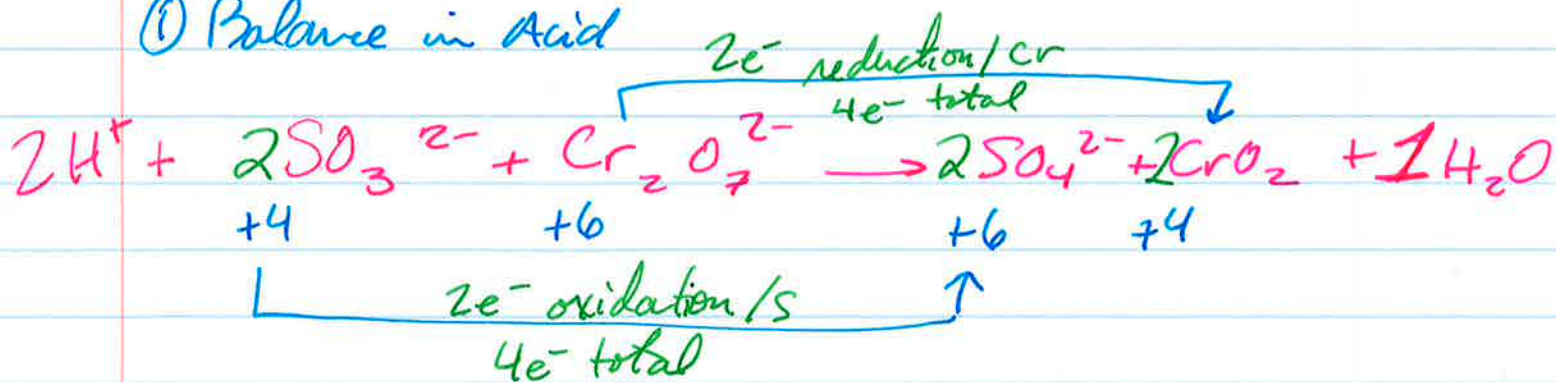


$$Q_c = \frac{[\text{Zn}^{2+}]}{[\text{Ag}^+]^2} = \frac{1.0}{0.040^2} = 625$$

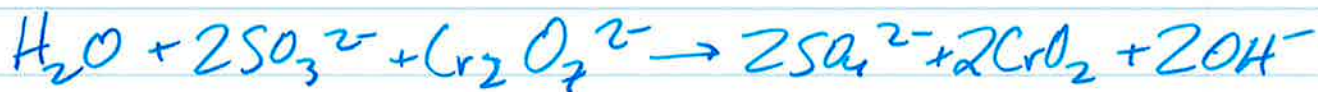
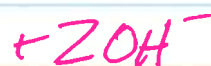
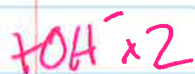
$$E = E^{\circ} - \frac{0.5916}{n} \log K_c$$

Balance in Base

① Balance in Acid



② Add hydroxide OH^- to both sides to get rid of H^+ then add H_2O to balance O's

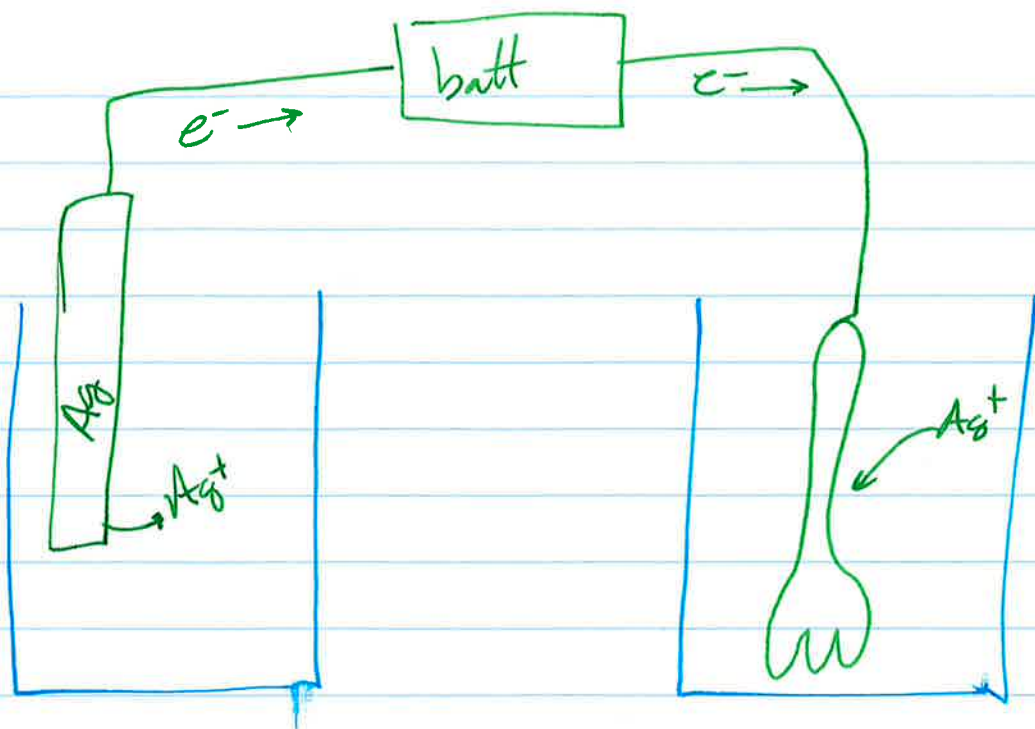


Galvanic Cells

$$\Delta G < 0, E > 0$$

Electrolytic Cells

$$\Delta G > 0, E < 0$$



What mass of Gold can be deposited by a current of 10.5 amp in 30 min starting with a solution of $AuCl_3(aq)$?

Au^{+3} $3Cl^-$

Charge = current * time
 (quantity of) (flow rate) * time
 (electrons)

$$\text{Coulombs} = \text{amp} * \text{s}$$

$$\text{charge} = 10.5 \text{ amp} * 30 * 60 \text{ s}$$

$$= 18900 \text{ coul}$$

$$1 \text{ mol } e^- = 96500 \text{ coul}$$

$$n_{e^-} = 18900 \text{ coul} \left| \frac{1 \text{ mol } e^-}{96500 \text{ coul}} \right. = 0.196 \text{ mole } e^-$$

$$n_{Au} = 0.196 \text{ mole } e^- \left| \frac{1 \text{ mol } Au}{3 \text{ mole } e^-} \right. = 0.0653 \text{ mol } Au \rightarrow 12.9 \text{ g } Au$$

Electrolysis of NaCl (aq)

Cathode



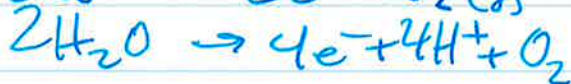
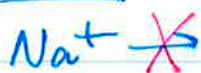
E°_{red}

-2.71V

—

-0.83V

Anode



E°_{ox}

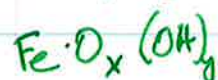
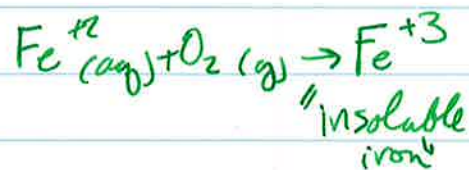
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-1.36V

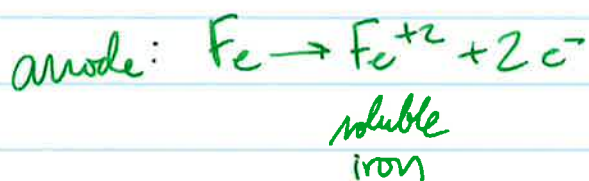
-1.23V



Corrosion



rust



Cathodic Protection

