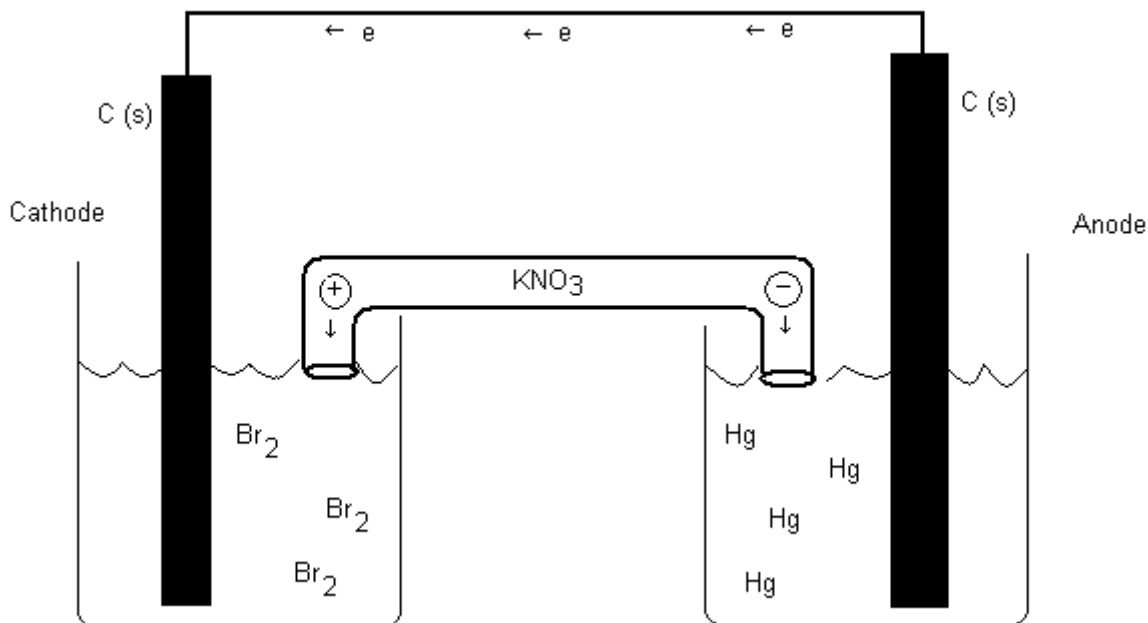


Electrochemistry Key



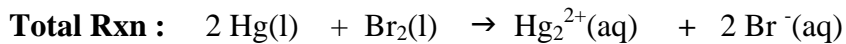
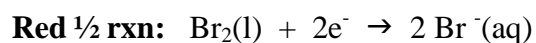
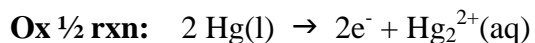
$$\mathcal{E}^{\circ} = 1.09 - 0.80 = 0.29 \text{ V}$$

$$\Delta G^{\circ} = -n\mathcal{F}\mathcal{E}^{\circ} = (-2 \text{ mol } e)(96500 \text{ J/V mol } e)(.29 \text{ V}) (\text{kJ} / 1000\text{J}) = -56 \text{ kJ}$$

$$\Delta G^{\circ} = -RT \ln K \quad \text{so} \quad \ln K = -55970 \text{ J} / (8.314 \text{ J/molK})(298\text{K}) = 22.59066 \quad \text{thus } K = 6.5 \times 10^9$$

$$\mathcal{E} = \mathcal{E}^{\circ} - (RT/n\mathcal{F}) \ln Q = 0.29 \text{ V} - [(8.314 \text{ J/molK})(298\text{K})] / [(2 \text{ mol } e)(96500 \text{ J/V mol } e)] \ln [(.25)^2(1.35)] = 0.32 \text{ V}$$

Final answers:



$$\mathcal{E}^{\circ} = \underline{\hspace{1cm}} 0.29 \text{ V} \quad \Delta G^{\circ} = \underline{\hspace{1cm}} -56 \text{ kJ} \quad K = \underline{\hspace{1cm}} 6.5 \times 10^9$$

$$\mathcal{E} = 0.32 \text{ V}$$

