

- **Gibbs Free Energy** (ΔG) is the bridge to the standard cell potential (E°) and the equilibrium constant (K).
 - This connection can be seen as:

E°_{cell}, ΔG, K Formulas		
<p style="text-align: center; background-color: #f0f0f0; margin-bottom: 10px;">$E^\circ_{\text{cell}} - \Delta G$ Formula</p> <p style="background-color: #e0e0ff; padding: 5px; margin-bottom: 10px;">$\Delta G^\circ = -$ ____ . ____ . ____</p> <ul style="list-style-type: none"> <input type="checkbox"/> ΔG° = Gibbs Free Energy in ____. <input type="checkbox"/> n = moles of e^- transferred ____ C <input type="checkbox"/> F = Faraday's Constant in ____ mol e^- <input type="checkbox"/> E°_{cell} = Cell Potential in ____ (V) 	<p style="text-align: center; background-color: #f0f0f0; margin-bottom: 10px;">$E^\circ_{\text{cell}} - K$ Formula</p> <p style="background-color: #e0e0ff; padding: 5px; margin-bottom: 10px;">$-$ ____ . ____ . ____ = $-$ ____ . ____ . ____</p>	<p style="text-align: center; background-color: #f0f0f0; margin-bottom: 10px;">K - ΔG Formula</p> <p style="background-color: #e0e0ff; padding: 5px; margin-bottom: 10px;">$\Delta G^\circ = -$ ____ . ____ . ____</p> <ul style="list-style-type: none"> <input type="checkbox"/> R = Gas Constant in ____ $\frac{\text{J}}{\text{mol} \cdot \text{K}}$ <input type="checkbox"/> T = Temperature in ____ <input type="checkbox"/> K = Equilibrium Constant

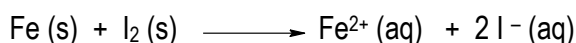
- Isolating the standard cell potential gives the formula:

E°_{Cell} – K Formula (Simplified)

$$E^{\circ}_{\text{Cell}} = \frac{RT}{nF} \ln K$$

EXAMPLE: A certain electrochemical reaction involves the transferring of 4 electrons. If the value of its equilibrium constant is 2.50×10^{12} at 25.0°C , calculate the standard cell potential.

PRACTICE: Calculate the equilibrium constant for the following reaction at 25°C.



Given the following reduction potentials:

