

measuring P.d.

Electrochemistry

relationship between chemical reactions and electricity

Electrolysis

Electrolytic cell

non-spontaneous

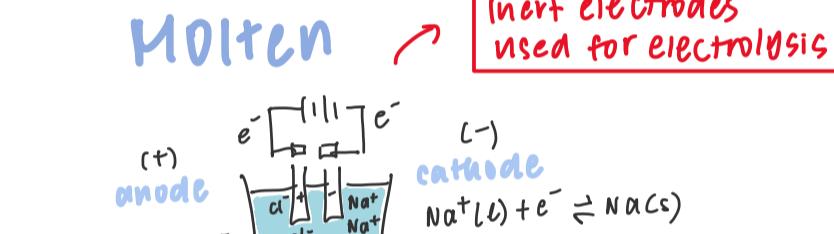
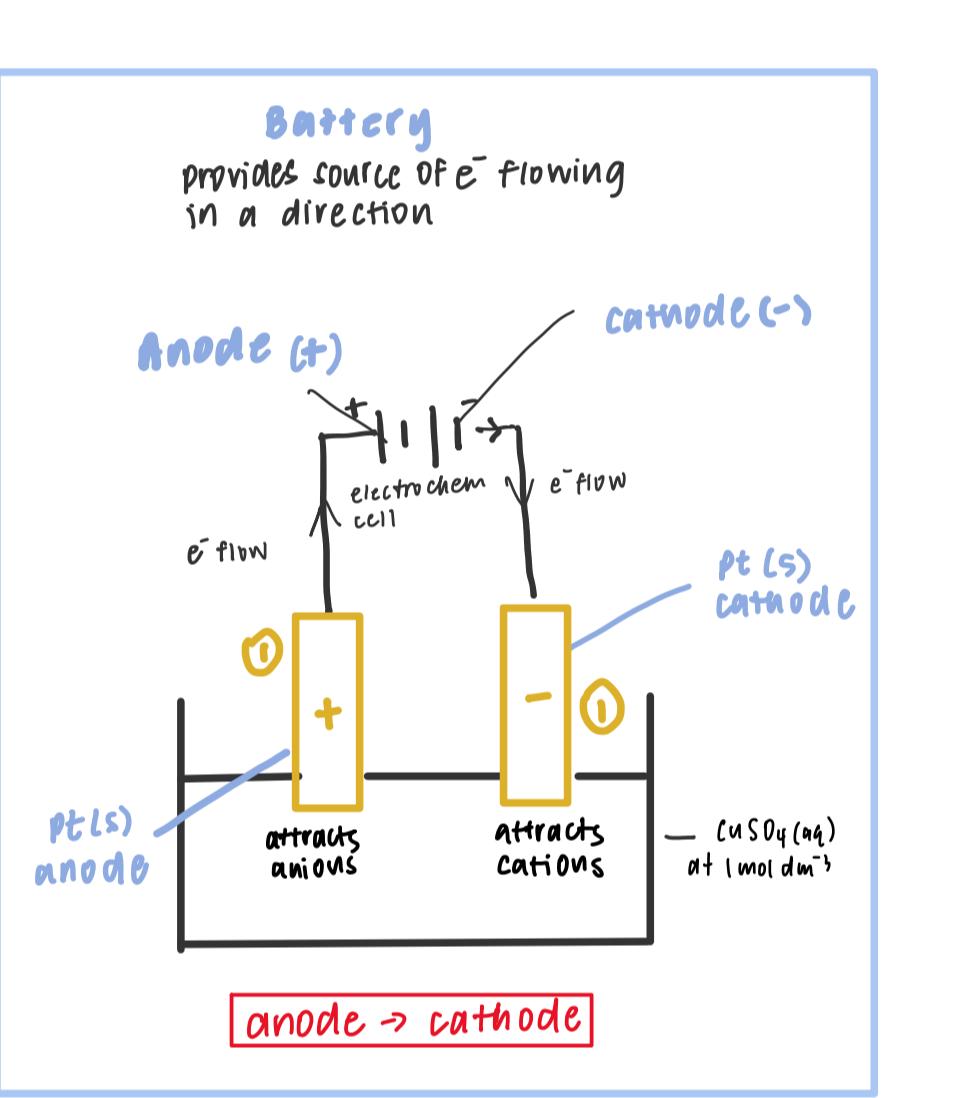
requires E to occur

electrical E → chemical E

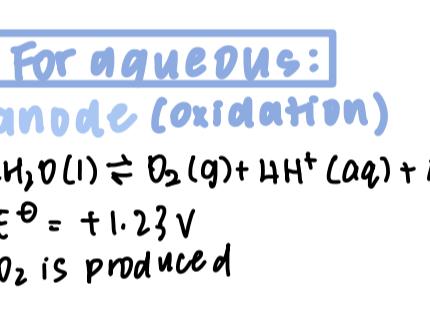
cathode → anode

(-) anion → anode (+)
cation → cathode (-)

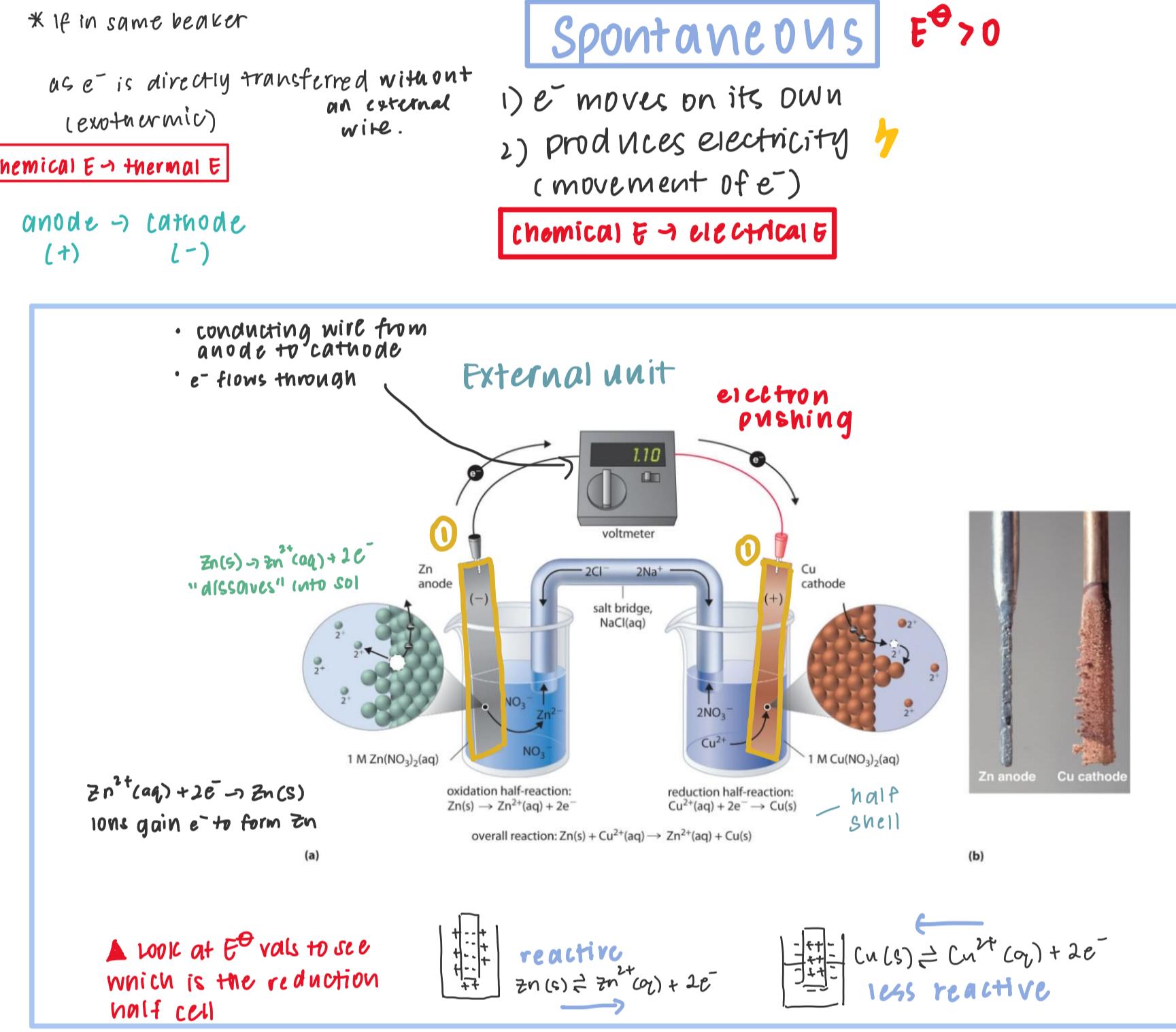
look at E^\ominus to determine which is oxidised / reduced → consider electrode



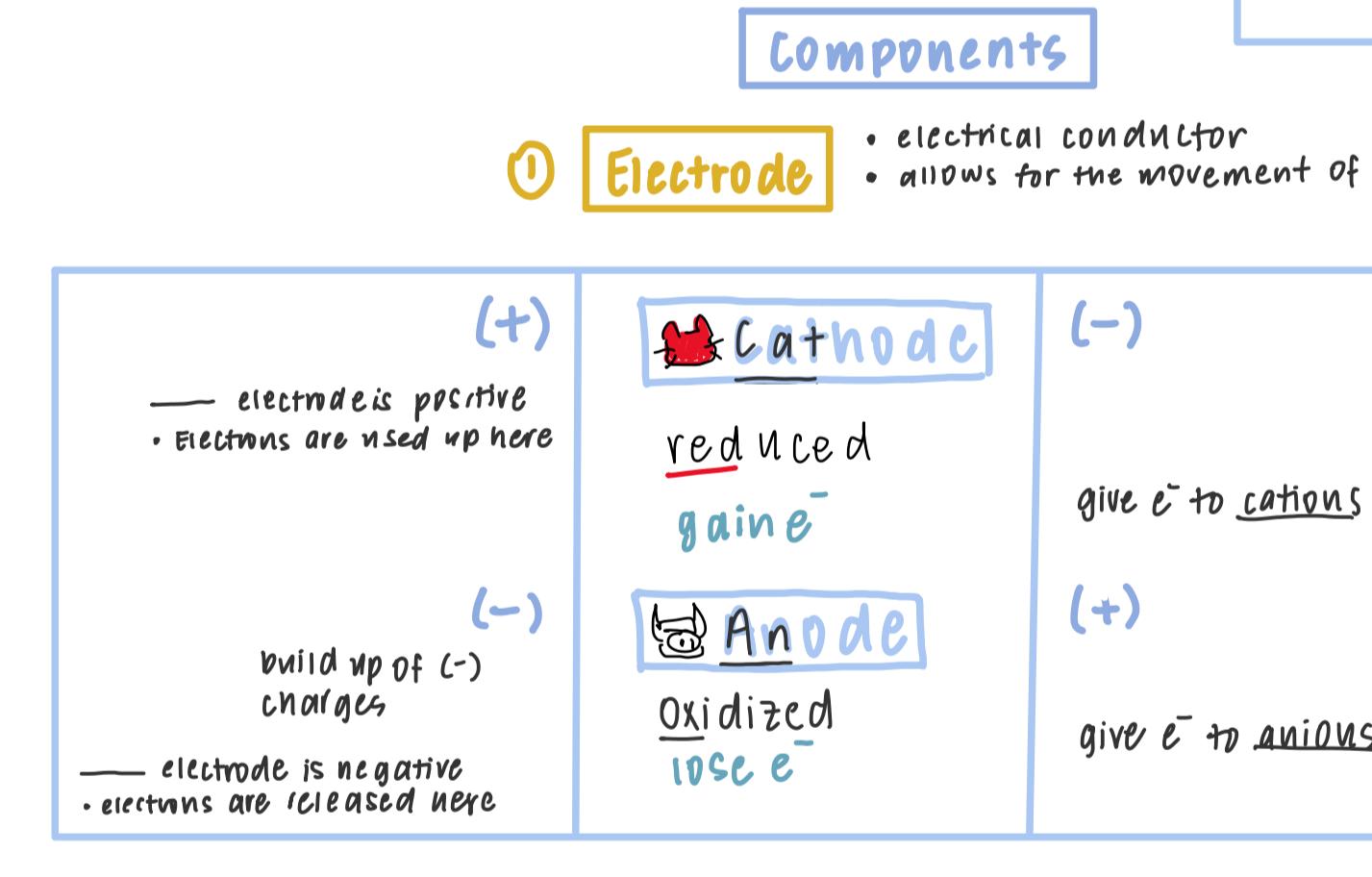
1) only 1 cation and 1 anion available for discharge



- Selected discharge** includes H₂O
- 1) ease of oxidation / reduction
 - at (-) chloride (anode)
 - at (+) iodide (cathode)
 - goes to iodide (smaller E^\ominus) easiest to be reduced (larger E^\ominus)
 - 2) concentration of species higher conc discharged in preference of lower conc
 - if $E_A^\ominus < E_B^\ominus$ but conc B conc A is reduced
 - 3) dilute: more water
 - 4) nature of electrode
 - anode: Cu^{2+} is preferentially oxidised
 - consider reactive electrode for anode and cathode
 - replicating

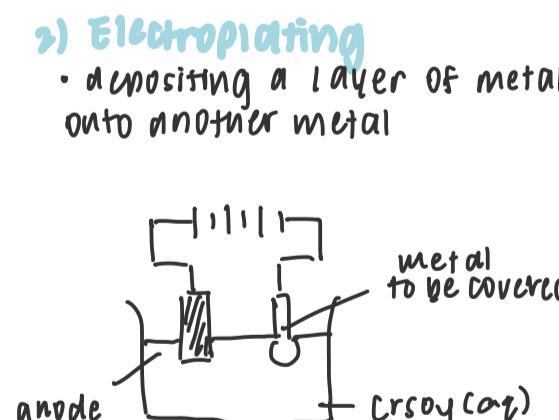
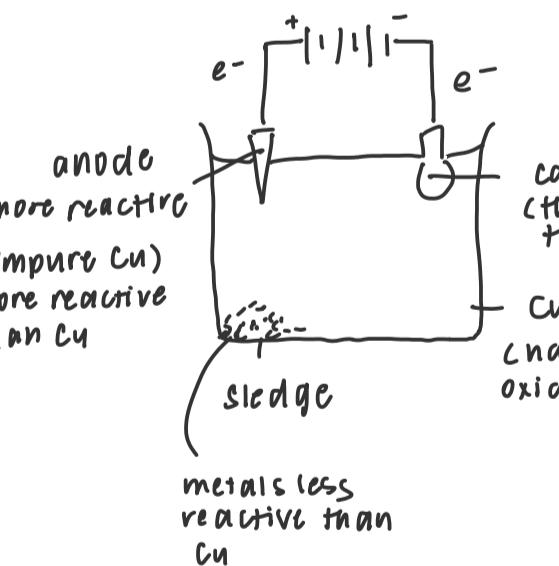


- ① Electrolyte**
- contains mobile e⁻ (can conduct electricity)
 - to create equilibrium
 - create a layer around anode and cathode
- ② Salt Bridge**
- maintaining electrical neutrality
 - prevents build up charges (lets e⁻ flow easily)
 - "cations" flow to the cathode
 $\text{Fe}^{2+} \rightarrow \text{Fe}^{3+} + e^-$, Fe^{3+} gets more positive so NO_3^- ions are supplied
 - "anions" flow to the anode
 $\text{Cu}^{2+} + 2e^- \rightarrow \text{Cu}$, Cu^{2+} gets more positive so NO_3^- ions are supplied



Industrial applications of electrolysis

Electric purification of copper



Quantitative aspects

