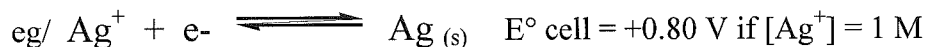


## 7. Electrochemical Cell – Applications (V.10)

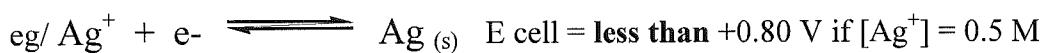
### a) Factors Affecting Electrochemical Cells

#### i) Concentration

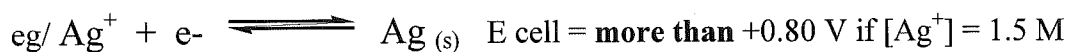
- a change means not 1 M (so the “°” is removed from the  $E^\circ$  cell)
- apply Le Chatelier’s principle:



a “+”  $E$  cell means the forward reaction (reduction) is favored



lower  $[\text{Ag}^+]$  means a shift left, reduction favored less, so lower  $E$  cell value.



higher  $[\text{Ag}^+]$  means a shift right, so reduction favored more, so higher  $E$  cell

#### ii) Surface Area

- what if we use a larger electrode?
  - will the  $E^\circ$  cell be larger, smaller, the same?
- ① the electrode is a solid.
  - ② changing the amount of solid will not affect its concentration
  - ③ if concentration is not affected, neither is the ox/red equilibrium
- therefore, the  $E^\circ$  cell will be the same!

(Note: the *rate* at which the cell works (reaction proceeds) will change!)

#### iii) Multiple Electrodes

- what if we have multiple anodes and multiple cathodes?
  - at which electrode will the reactions proceed?
- choose the cathode – anode pair that will give the largest  $E^\circ$  cell  
(the half reactions farthest from each other of the table!)
  - the other electrodes will be spectators!

→ Example

Do Questions: #39, 42-45 page 225-226; #47-48 page 228