

## THEORY

When a metal is immersed in a solution of its own ions, an equilibrium is established between the metal and its ions. This is represented by the following equation:

$$M \rightleftharpoons M^{n+} + ne^{-}$$

The equilibrium constant for this reaction is the standard electrode potential,  $E^{\circ}$ . The standard electrode potential is a measure of the tendency of a metal to lose electrons and form ions. The more positive the  $E^{\circ}$  value, the more readily the metal is oxidized.

| Metal | Standard Electrode Potential, $E^{\circ}$ (V) |
|-------|---|
| Zn    | -0.76   |
| Fe    | -0.44   |
| Cu    | +0.34   |
| Ag    | +0.80   |

From the above table, it is clear that Zn has the most negative  $E^{\circ}$  value, which means it is the most easily oxidized metal among the four listed.

## DISCUSSION



From the above diagram, it is clear that the tendency of a metal to be oxidized increases as its standard electrode potential increases.