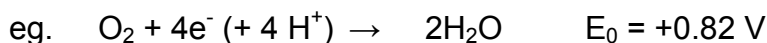
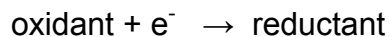
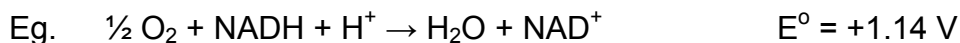


## Rules for Understanding Redox Reactions

1. By convention, redox half-reactions are written as reductions:



2. The more positive the  $E_0$  value, the higher the affinity of the oxidant for  $e^-$ 's; ie the better an oxidant it is. The more negative the  $E_0$  value, the better reductant it is – it gives up  $e^-$ 's more easily.
3. Under standard conditions, an oxidant (eg.  $\text{O}_2$ ,  $E_0 = +0.82 \text{ V}$ ) will oxidize a reductant (eg.  $\text{NADH}$ ,  $E_0 = -0.32 \text{ V}$ ) if the reductant exhibits a more negative  $E_0$  value. Conversely, a reductant will reduce any oxidant whose  $E_0$  value is more positive. Thus  $\text{O}_2$  will oxidize  $\text{NADH}$  ( $\text{NADH}$  will reduce  $\text{O}_2$ ) under standard conditions.
4. The sign is reversed for half-reactions written in the opposite direction.
5. A net positive  $E_0$  value for any conjugate redox pair (eg.  $\text{O}_2/\text{NADH}$ ) means the forward reaction is favorable under standard conditions. A net negative  $E_0$  value means the reverse reaction is favorable. (opposite of  $\Delta G^0$ )



Thus, oxidation of  $\text{NADH}$  by oxygen is highly favorable.