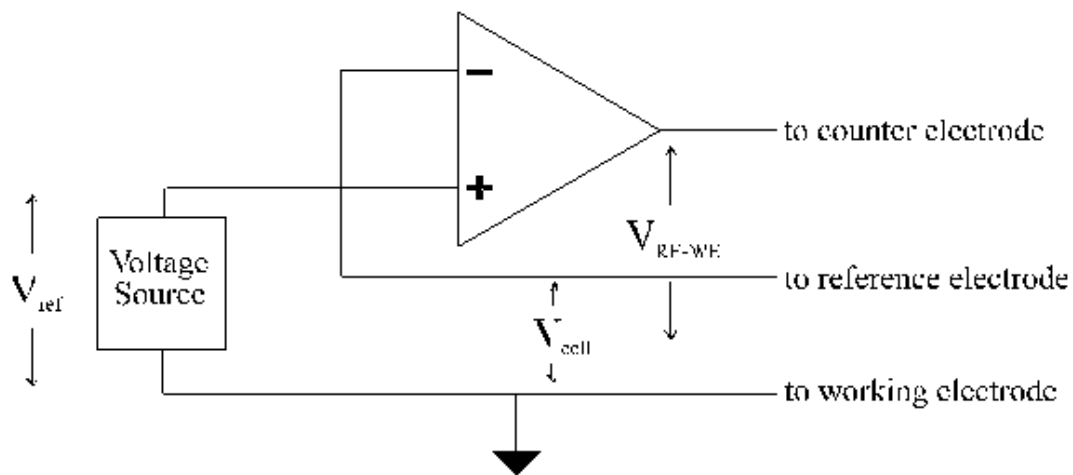


Operation of a Simple Potentiostat



The output voltage of the operational amplifier is given by

$$e_{out} = A(e_+ - e_-)$$

$$\text{where } A = \text{gain} (\sim 10^6)$$

e_+ = voltage at non-inverting (+) input

e_- = voltage at inverting (-) input

Then

$$V_{CELL} = A(V_{REF} - V_{RE-WE})$$

$$\text{i.e. } V_{RE-WE} = V_{REF} - \frac{V_{CELL}}{A}$$

as A is very large,

$$V_{RE-WE} \cong V_{REF}$$

Note that V_{RE-WE} is minus the electrode potential of the working electrode (V_{RE-WE}), so the electrode potential will be $-V_{REF}$.