CLAIMS:

1. A method of performing an electrochemical process which utilises at least one electrode and comprises the steps of:

applying a voltage to the electrode to implement an electrochemical reaction, and

controlling a charge on the electrode to affect the electrochemical reaction.

2. A method in accordance with claim 1, wherein the step of controlling the charge on the electrode comprises the step of applying an electric field to the electrode.

3. A method in accordance with claim 1 or claim 2, wherein the step of applying the electric field to the electrode comprises applying a voltage to a further electrode positioned proximate the electrode.

4. A method in accordance with claim 1 or claim 2, wherein the step of applying the electric field to the electrode comprises applying a voltage to a capacitor arrangement positioned proximate to the electrode.

5. A method in accordance with any one of the preceding Claims, wherein the step of controlling the charge is carried out prior to the step of applying the voltage to implement the electrochemical reaction.

6. A method in accordance with any one of the preceding Claims, wherein the electrode is of a material catalytic for the electro-chemical reaction, and the step of controlling the charge is carried out to control the binding energy of the catalytic reaction.

7. A method in accordance with any one of the preceding Claims, wherein the electrochemical reaction is one of a Oxygen Reduction Reaction, Hydrogen Evolution Reaction, and CO2 Reduction Reaction.

8. A method in accordance with Claim 7, wherein the electrode is of graphene.

9. An apparatus for implementing an electrochemical process, comprising an electrode, a primary circuit arranged to apply a voltage to the electrode to implement an electrochemical reaction, and a control arrangement for controlling a charge on the electrode to affect the electrochemical reaction.

10. An apparatus in accordance with Claim 9, wherein the control arrangement comprises a gate electrode positioned proximate the electrode and arranged to apply an electric field to control charge on the electrode.

11. An apparatus in accordance with Claim 10, wherein the control arrangement comprises a secondary circuit arranged to apply a voltage to the gate electrode to produce the electric field.

12. An apparatus in accordance with Claim 9, wherein the control arrangement comprises a capacitor arrangement positioned proximate to the electrode and arranged to apply an electric field to control charge on the electrode.

13. An apparatus in accordance with Claim 12, wherein the control arrangement comprising a secondary circuit arranged to apply voltage to the capacitor arrangement to produce the electric field.

14. An apparatus in accordance with Claim 12 or Claim 13, wherein the capacitor arrangement is formed by the further electrode and the electrode forming a pair of capacitive electrodes.

15. An apparatus in accordance with Claim 12 or Claim 13, wherein the capacitor arrangement comprises a pair of further electrodes forming a capacitor and positioned proximate the electrode.