

8.2 Electrochemical cells and their operations

Electrochemical cells can be divided into two classes: *galvanic* (the term *voltaic* is not recommended) and *electrolytic*. In galvanic operation the cell operates spontaneously because the opposing electromotive force (emf) is absolutely less than the zero current potentiometric potential difference. Chemical energy is converted into electrical energy. The "open circuit" electromotive force (emf) is the limiting value of the electric potential difference at zero current. An electrolytic cell is one in which chemical reactions are caused by applying an external potential difference (E) greater than, and opposite to, the galvanic electromotive force of the cell. The zero current emf lies numerically between the decreasing cell potential differences during galvanic action, and the absolutely larger applied potential differences required for electrolytic action.