

8.3 Electrodes

In some techniques, like conductometry and differential potentiometry, two *indicator electrodes* are used. However, more often as in potentiometry and in voltammetry performed in aqueous solutions the second electrode is more or less non-polarizable and is used merely to complete the measuring circuit and to provide a suitably constant, reference potential. An electrode serving these purposes is called a *reference electrode*. Sometimes these functions of the reference electrode are separated by using a *three-electrode configuration*. This comprises

- (i) an *indicator* (or test) or *working electrode*;
- (ii) a *reference electrode*, through which no appreciable current is allowed to flow, and which is used to observe or control the potential of the first electrode; and
- (iii) an *auxiliary electrode* or *counter electrode*, which serves to carry the current that passes through the first electrode. Some electroanalytical techniques, including polarography, employ cell configurations with some instrumental compensation for the ohmic potential drop.

Many type of electrodes are used, which may be classified into groups according to their composition, form and size or according to their operating principles.