

8.5.2 Amperometric and related techniques (Techniques Involving Electrode Reactions and Employing Constant Excitation Signals)

Recommended Name of Technique	Excitation Signal (Constant)	Independent Variable	System	Measured Response	Typical Response Curve	Remarks
<b>Amperometry</b>	Applied E.M.F. or potential E	Concentration $c$ , time $t$ , or any other independent variable	One working electrode and one reference electrode in stirred or moving solution	Current, $i(I) = f(c)$		A measure of the cell current when the potential difference between indicator and reference electrodes is controlled. Terms like “stirred-mercury-pool amperometry” and “rotating-platinum-wire-electrode amperometry” are recommended to denote the indicator electrode employed.
<b>Amperometric titration</b>	As for amperometry	Volume $V$ (or otherwise measured amount) of added reagent	As for amperometry	Current, $i(I) = f(V)$		The term “amperometric titration with a dropping mercury electrode” is recommended in preference to “polarometric titration” or “polarographic titration”.
<b>Chrono-amperometry</b>		Time $t$	Stationary working electrode and a reference electrode in unstirred solution	Current, $i(I) = f(t)$		A measure of the time dependence of cell current when the potential difference between indicator and reference electrodes is controlled. Usually performed with a stationary indicator electrode in unstirred solution, current-time curves reflect mass transfer and dynamics of the chemical processes.
<b>Chrono-coulometry</b>			As for amperometry	Quantity of electricity, $Q = f(t)$		A measure of the time dependence of the quantity of electricity (integrated current) as a function of time under chrono-amperometric conditions.

8.5.2 Amperometric and related techniques (Techniques Involving Electrode Reactions and Employing Constant Excitation Signals) (Continued)

Recommended Name of Technique	Excitation Signal (Constant)	Independent Variable	System	Measured Response	Typical Response Curve	Remarks
<b>Electro-gravimetry</b>	Applied E or current $i$ ( $I$ )		Specially designed electrode pairs; one acting as cathode, while the other as anode	Mass $m$ of material deposited on the working electrode		A measure of the mass of material deposited on an electrode, usually with convective mass transfer under conditions where quantitative recovery of the material is obtained. The terms "internal electrogravimetry" and "spontaneous electrogravimetry" are recommended to denote spontaneous deposition.
<b>Electrography</b>				Identification on determination of material stripped off		Cathodic or anodic stripping from a solid electrode sample material into an electrolyte in a porous medium; mainly used for qualitative analysis of metals without decomposition.
<b>Controlled potential coulometry</b>	Potential E	Time $t$	Working electrode, reference electrode and auxiliary electrode immersed in stirred solution	Quantity of electricity $Q = \int i dt$		A measure of the total quantity of electricity required to electrolyze a specific electroactive species in solution, selected by controlling the potential of the working electrode. Usually conducted with convective mass transfer. The term "controlled-potential coulometric titration" is inappropriate and is not recommended.
<b>Controlled potential electro-gravimetry</b>			As for controlled potential coulometry	Mass $m$ of material deposited on the working electrode		

