

# Glossary

## 1 Abbreviations

AMPD	2-amino-2-methylpropane-1,3-diol
ANDSA	7-aminonaphthalene-1,3-disulfonic acid
BES	<i>N,N</i> -bis(2-hydroxyethyl)aminoethanesulfonic acid
BGE	background electrolyte
Bicine	<i>N,N</i> -bis(2-hydroxyethyl)glycine
CAPS	3-(cyclohexylamino)propanesulfonic acid
CCE	chiral capillary electrophoresis
CD	cyclodextrin
CE	capillary electrophoresis
CEC	capillary electrochromatography
CG	(-)-catechin gallate
CGE	capillary gel electrophoresis
CHAPS	3-[3-chloroamidopropyl]dimethylammonio]propane-1-sulfonate
CHAPSO	3-[3-chloroamidopropyl]dimethylammonio]-2-hydroxypropane-1-sulfonate
CHES	3-(cyclohexylamino)ethanesulfonic acid
CIEF	capillary isoelectric focusing
CITP	capillary isotachopheresis
CMC	critical micelle concentration
CTAB	cetyltrimethylammonium bromide
CTAH	cetyltrimethylammonium hydroxide
COUTA	coumaroyltartaric acid
CZE	capillary zone electrophoresis
DSCE	dynamic-sieving capillary electrophoresis
DTAB	dodecyltrimethylammonium bromide
DTAC	dodecyltrimethylammonium chloride
DTT	DL-dithiothreitol
EC	(-)-epicatechin
ECG	(-)-epicatechin-3-gallate
EDTA	ethylenediaminetetraacetic acid
EGC	(-)-epigallocatechin

EGCG	(-)-epigallocatechin-3-gallate
EOF	electroosmotic flow
ESI	electrospray ionisation
FSCE	free solution capillary electrophoresis
GC	gas chromatography or (+)-gallocatechin
GCG	(-)-gallocatechin gallate
HEC	hydroxyethylcellulose
HMEC	hydroxymethylcellulose
HPLC	high performance liquid chromatography
HPMC	hydroxypropylmethylcellulose
ID	internal diameter
LC	liquid chromatography
LIF	laser-induced fluorescence
LMT	sodium <i>N</i> -lauroyl- <i>N</i> -methyltaurate
LOD	limit of detection
LOQ	limit of quantification
MECC	micellar electrokinetic capillary chromatography
MEKC	micellar electrokinetic chromatography
MES	2-( <i>N</i> -morpholino)ethanesulfonic acid
MHEC	methylhydroxyethylcellulose
MHPC	methylhydroxypropylcellulose
MOPS	3-( <i>N</i> -morpholino)propanesulfonic acid
MOPSO	3-( <i>N</i> -morpholino)-2-hydroxypropanesulfonic acid
MS	mass spectrometer
ODS	octadecylsilyl
PAGE	poly(acrylamide) gel electrophoresis
PCR	polymerase chain reaction
PMMA	poly(methyl methacrylate)
SDS	sodium dodecyl sulfate
SDVal	sodium <i>N</i> -dodecanoyl- <i>L</i> -valinate
STS	sodium tetradecyl sulfate
TMA	trimellitic acid
Tris	tris(hydroxymethyl)aminomethane
TTAB	tetradecyltrimethylammonium bromide
UV	ultraviolet

## 2 Symbols

$A$	peak area
$A_N$	normalised peak area
$C$	concentration
$d$	inner diameter of capillary
$E$	electric field strength
$k'$	capacity factor
$L$ or $L_t$	total capillary length
$L_e$	effective capillary length

$N$	number of theoretical plates
$P$	pressure
$q$	charge
$Q$	quantity loaded
$r$	ion radius or capillary radius
$t$	time
$t_a$	analyte migration time
$t_{\text{EOF}}$	EOF migration time
$t_m$	migration time or micelle migration time
$T$	temperature
$v$	migration velocity
$v_{\text{EOF}}$	EOF velocity
$v_{\text{ion}}$	ion velocity
$V$	voltage
$w_b$	peak width at its base
$\epsilon$	dielectric constant or molar extinction coefficient
$\epsilon_0$	dielectric constant of a vacuum
$\lambda_{\text{max}}$	maximum absorbance wavelength
$\eta$	viscosity
$\mu_a$	apparent mobility
$\mu_e$	electrophoretic/effective mobility
$\mu_{\text{EOF}}$	electroosmotic flow mobility
$\zeta$	zeta potential

### 3 Definitions

**Ampholyte** – a compound that can be either an anion or a cation depending upon the pH of the solution in which it is.

**Anion** – a negatively charged ion.

**Anode** – a positively charged electrode.

**Buffer** – a substance that resists solution pH changes upon addition of acid or alkali. Buffers are used in situations where it is important to maintain a constant or controlled pH.

**Capillary** – a narrow-bore tube.

**Cathode** – a negatively charged electrode.

**Cation** – a positively charged ion.

**Chaotropic agent** – a substance that changes the structure of water by disrupting its hydrogen-bonding, which has the effect of reducing viscosity.

**Critical micelle concentration** – the lowest concentration of a substance at which it forms micelles.

**Electrical double layer** – the distribution of solution ions at a charged surface.

**Electrode** – the point of contact between an electric conductor and the object to which a current is to be applied. In CE it is necessary to ensure that the electrode material is inert, in the sense that it does not react, either chemically or electrochemically, under the conditions which will be imposed during its use.

- Electrolyte** – a substance that separates into ions when in solution and therefore becomes capable of conducting electricity; an ionic solute.
- Electroosmotic flow** – the bulk flow of liquid in CE. It is the motion of a liquid relative to a fixed charged surface caused by an electric field.
- Electropherogram** – the data output from CE; a plot of detector response against migration time.
- Electrophoresis** – the separation of ionic solutes based on differences in their rates of movement in an applied electric field.
- Electrophoretic mobility** – the factor that determines the rate at which a given ionic solute may move by electrophoresis.
- Micelle** – an aggregate of surfactant molecules that forms when the surfactant is present at a concentration at or above its CMC. Micelles form in order to make the surfactant more stable in solution. In water, micelles form such that the outside of the micelle is hydrophilic and the inside is hydrophobic. This arrangement allows the surfactant to remain in solution at higher concentrations than would be otherwise possible.
- Migration** – the movement of ionic solutes between opposite electrodes during electrophoresis.
- Migration time** – the time taken for an ionic solute to move the length of the capillary to the detector.
- Migration velocity** – the speed with which ionic solutes move through a capillary during electrophoresis.
- Number of theoretical plates** – an indicator of separation efficiency or the ability to give narrow peaks. The higher the number of theoretical plates, the better is the separation efficiency.
- Pseudo-stationary phase** – a moving phase that acts as a stationary phase, *e.g.*, the micelles in MEKC, which cause separation by a similar partitioning mechanism as a stationary phase in HPLC, but are not stationary.
- Selectivity** – the relative order in which ionic solutes migrate/elute as determined by the separation mechanism used.
- Sensitivity** – the ratio of measured detector signal to an amount of a substance, *i.e.*, the slope of a calibration plot.
- Separation efficiency** – a measure of the ability of a separation technique to yield narrow peaks in a chromatogram or electropherogram.
- Zeta potential** – the potential difference at any point within an electrical double layer.