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E. Heftmann

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chromatography 6th edition

fundamentals and applications of chromatography and related differential migration methods

part A: fundamentals and techniques

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edited by

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List of Abbreviations

A

A	ampere, adenine, amphetamine
Å	ångstrom = 10^{-8} cm
AA	amino acids, arachidonic acid
AAEE	acryloylaminoethoxyethanol
AAS	atomic absorption spectrometry
ABEE	4-aminobenzoic acid ethyl ester
AC	alternating current, acetylcodeine, affinity chromatography
Ac	acetyl
AcP	acyl phosphatase
ADCC	antibody-dependent cellular cytotoxicity
ADME	absorption, distribution, metabolism, and excretion
AED	atomic-emission detector
AEDA	aroma extract-dilution analysis
AEO	alcohol ethoxylates
AEOC	2-(9-anthryl)ethyl chloroformate
AES	atomic emission spectrometry
AFS	atomic fluorescence spectrometry
ag	attogram = 10^{-18} g
AGP	acid glycoprotein
AIA	Analytical Instrument Association
Ala	alanine
AMAC	2-aminoacridine
AMD	automated multiple development
amol	attomol = 10^{-18} mol
AMS	accelerator mass spectrometer
amu	atomic mass units
ANTS	aminonaphthalene-1,3,6-trisulfonic acid
ANDI	analytical-data interchange
AP	alkylphenols
APCI	atmospheric-pressure chemical ionization
APD	avalanche photodiode
APEC	alkylphenoxy carboxylates
APEO	alkylphenol ethoxylates
API	atmospheric-pressure ionization
APOC	1-(9-anthryl)-2-propyl chloroformate
aq.	aqueous
AQC	6-aminoquinolyl-*N*-hydroxy-succinimidyl carbamate
ARC	acridone-*N*-acetyl

Arg	arginine
ASB	amidosufobetaine
ASE	accelerated solvent extraction
Asn	asparagine
Asp	aspartate
atm	atmosphere = 1 bar = 760 torr = *ca*. 14.7 psi = 10^5 Pa
AUC	area under the curve

B

bar	atmosphere = *ca*. 14.7 psi
BBP	butylbenzyl phthalate
BCIP	5-bromo-4-chloro-3-indolyl phosphate
BDB	benzoxodioxoazolylbutanamine
BDE	brominated diphenyl ethers
BGE	background electrolyte
BHT	2,6-di-*t*-butyl-*p*-cresol (butylated hydroxytoluene)
BN-chamber	Brenner-Niederwieser chamber
BP	buprenorphine
bp	base pair
BPA	bisphenol A
BrNP	brominated nonylphenol
BrNPEC	brominated nonylphenol carboxylates
BrNPEO	brominated nonylphenol ethoxylates
BSA	bovine serum albumin
BTEX	benzene, toluene, ethylbenzene and xylenes
Bu	butyl
BZE	benzoylecgonine
BZITC	benzyl isothiocyanate

C

C	centigrade, celsius, cytosine, codeine
CA	carrier ampholyte
CAD	computer-assisted design
CAE	capillary array electrophoresis
CAGE	capillary affinity gel electrophoresis
cap	capillary
CAPEC	dicarboxylated alkylphenol ethoxylate
CB	chlorinated biphenyls
CBD	cannabidiol
CBN	cannabinol
CBQ	3-(*p*-carboxybenzoyl)quinoline 2-carboxaldehyde
CBQCA	3-(4-carboxybenzoyl)-2-quinoline carboxyaldehyde
CCD	chemical composition distribution
CCD	charge-coupled device
CCLC	column/column liquid chromatography
CD	cyclodextrin
CD	circular dichroism
CD	continuous development
CDEA	coconut diethanolamide

CDICT	(1*R*,2*R*)-*N*-[(2-isothiocyanato)cyclo-hexyl]-6-methoxy-4-quinolinylamide
CE	capillary electrophoresis, cholesterol esters
CEC	capillary electro(kinetic)chromatography
CFD	computational fluid dynamics
CFLSI-MS	continuous-flow-liquid secondary-ion mass spectrometry
CGE	capillary gel electrophoresis
CHARM	combined hedonic and response measurement
CHO	Chinese hamster ovarian (cells)
CI	chemical ionization
CID	collision-induced dissociation
cIEF	capillary isoelectric focusing
CINP	chlorinated nonylphenol
CINPEC	chlorinated nonylphenol carboxylates
CINPEO	chlorinated nonylphenol ethoxylates
CIS	coordinated ion spray
CLC	column liquid chromatography, conjoint liquid chromatography
CLEC	chiral ligand exchange chromatography
CLND	chemiluminescent nitrogen detector
CM	carboxymethyl
cm	centimeter = 10^{-2} m
CMA	carbazole-*N*-(2-methyl)acetyl
CMC	critical micelle concentration
COC	cocaine
conc.	concentrated
CRA	carbazole-9-acetyl
CRF	charge-remote fragmentation
CRMV	collagenase-released matrix vesicle
CRP	carbazole-9-propionyl
CSF	cerebrospinal fluid
CSGE	conformation-sensitive gel electrophoresis
CSP	chiral stationary phase
CTAB	cetyltrimethylammonium bromide
CTAC	cetyltrimethylammonium chloride
Cys	cysteine
CZE	capillary zone electrophoresis

D

2-D	2-dimensional
Da	dalton
dabsyl	4-dimethylaminoazobenzene 4′-sulfonyl chloride
DABTH	4,4-*N,N*-dimethylaminoazobenzene 4′-isothiocyanate
DAD	diode-array detector
DAG	diacylglycerols
DAM	diacetylmorphine
DANI	1,3-diacetoxy-1-(4-nitrophenyl)-2-propyl isothiocyanate
DAR	digital autoradiography
DAT	diacetyl-L-tartaric anhydride
DATS	dialkyltetralinesulfonate
DBD	degree-of-branching distribution

DBP	dibutylphthalate
DBT	dibenzoyl-L-tartaric anhydride
DC	direct current
DCCC	droplet counter-current chromatography
DCM	dichloromethane
DCP	direct-current plasma
DDT	dichlorodiphenyltrichloroethane
DEAE	diethylaminoethyl
DEHP	di(2-ethylhexyl)phthalate
DEP	diethylphthalate
DEP	di-electrophoresis
des	desamido
DGGE	denaturing gradient gel electrophoresis
DHA	docosahexaenoic acid
DHB	2,5-dihydroxybenzoic acid
DHC	dihydrocodeine
DHET	dihydroxyeicosatrienoic acid
DHM	dihydromorphine
DHPLC	denaturing HPLC
disc	discontinuous
DLS	dynamic light scattering
DMA	dimethylaniline
DMALS	depolarization multi-angle light scattering
DMOX	2-alkenyl-4,4-dimethyloxazolines
DMP	dimethylphthalate
DMSO	dimethylsulfoxide
DMT	dimethoxytrityl
DNA	deoxyribonucleic acid
DNB	dinitrobenzoyl
DnOP	di-*n*-octylphthalate
DNP	dinitrophenyl
DNPH	dinitrophenylhydrazine
DNPU	dinitrophenylurethane
DNS	5-dimethylaminonaphthalene-1-sulfonyl (dansyl)
DNT	dinitrotoluene
dNTP	deoxynucleoside triphosphate
DOC	dissolved organic carbon
DP	degree of polymerization
dpm	disintegrations per minute
DPPP	diphenyl-1-pyrenylphosphine
DRIFT	diffuse-reflectance Fourier transform
dsDNA	double-stranded DNA
DTAB	dodecyltrimethylammonium bromide
DTDP	dithiodipyridine
DTDP	3-(4,6-dichloro-1,3,5-triazinylamino)-7-dimethylamino-2-methylphenazine
DTE	dithioerythrol
DTPA	diethylenetriaminepentaacetic acid
DTT	dithiothreitol
DVB	divinylbenzene

E

EAD	electro-antennographic detection
EAG	electro-antennograph
EC	electrokinetic chromatography
ECD	electron-capture detector
ECG	ecgonine
ECN	equivalent carbon number
EDC	endocrine-disrupting compounds
EDDP	2-ethylidene-1,5-dimethyl-3,3-diphenylpyrrolidine
EDTA	ethylenediaminetetraacetic acid
ee	enantiomeric excess
EGDN	ethyleneglycol dinitrate
EI	electron ionization, electron impact
EIC	electrostatic ion chromatography
EKC	electrokinetic capillary chromatography
ekd	electrokinetically driven
ELISA	enzyme-linked immunosorbent assay
ELSD	evaporative light-scattering detector
em	emission
EMDP	2-ethyl-5-methyl-3,3-diphenyl-1-pyrrolidine
EME	electrostatic/magnetic/electrostatic geometry
EME	ecgonine methyl ester
EOF	electro-osmotic flow
EPA	eicosapentaenoic acid
EPA	Environmental Protection Agency
EPC	electro planar chromatography
EPF	zero electro-osmotic flow
EPO	erythropoietin
EpPUFA	epoxypolyunsaturated fatty acids
Eqn.	Equation
ERIN	electrochemically regenerated ion neutralizer
ESI	electrospray ionization
ESR	electron-spin resonance
Et	ethyl
ET	electrothermal
ET	energy transfer
EU	endotoxin unit
eV	electron volt
EVB	ethylvinylbenzene
ex	excitation

F

FVIII	blood coagulation Factor VIII
FA	fatty acids
FAAS	flame atomic absorption spectrometry
FAB	fast atom bombardment
FACE	fluorophore-assisted carbohydrate electrophoresis
FACS	fluorescence-activated cell sorting

FAD	full adsorption/desorption
FAME	fatty acid methyl esters
FCSE	fully concurrent solvent evaporation
FD	field desorption
FDA	Food & Drug Administration
FDAA	1-fluoro-2,4-dinitrophenyl-5-L-alanine amide (Marfey's reagent)
FFA	free fatty acids
FFPC	forced-flow planar chromatography
fg	femtogram = 10^{-15} g
FIA	flow injection analysis
FID	flame-ionization detector
Fig.	Figure
FLD	fluorescence detection
FLEC	1-(9-fluorenyl)-ethyl chloroformate
FMOC	9-fluorenylmetyl chloroformate
fmol	femtomol = 10^{-15} mol
FPD	flame-photometric detector
FPLC	Fast Protein Liquid Chromatography
FRES	forward recoil spectrometry
FS	fused silica
FT	Fourier transform
ft.	foot = 30.48 cm
FTH	fluorescein isothiocyanate
FT-ICR-MS	Fourier-transform ion-cyclotron resonance mass spectrometry
FTID	flame-thermionic ionization detector

G

g	gram
G	guanine
GABA	gamma-aminobutyric acid
GBL	gamma-butyrolactone
GC	gas chromatography
GC × GC	two-dimensional gas chromatography
GD	glow discharge
GH	growth hormone
GHB	gamma-hydroxybutyrate
GITC	2,3,4,6-tetra-*O*-acetyl-1-thio-β-D-glucopyranosyl isothiocyanate
GLC	gas/liquid chromatography
Gln	glutamine
Glu	glutamate
Gly	glycine
GM	glycidylmethacrylate
GPC	gel permeation chromatography
GPEC	gradient polymer elution chromatography
GPL	glycerophospholipid

H

h	hour(s)
HA	heteroduplex analysis
Hb	hemoglobin
HDC	hydrodynamic chromatography
HDL	high-density lipoproteins
HEC	hydroxyethylcellulose
HEDTC	*bis*(2-hydroxyethyl)dithiocarbamate
HEPES	*N*-2-hydroxyethylpiperazine-*N*′-2-ethanesulfonic acid
HETP	height equivalent to a theoretical plate
HFB	hexafluorobenzoyl
HFBA	heptafluorobutyric acid
HFBAA	heptafluorobutyric anhydride
hGH	human growth hormone
HGP	human genome project
HIBA	α-hydroxyisobutyric acid
HIC	hydrophobic-interaction chromatography
HILIC	hydrophilic-interaction chromatography
His	histidine
HMA	hexamethonium
HPAEC	high-performance anion-exchange chromatography
HPC	hydroxypropylcellulose
HPCE	high-performance capillary electrophoresis
HPLC	high-performance liquid chromatography
HPMC	hydroxypropylmethylcellulose
HPODE	hydroperoxyoctadecadienoic acid
HPSEC	high-performance size-exclusion chromatography
HPTLC	high-performance thin-layer chromatography
HQS	8-hydroxyquinolinesulfonate
HRGC	high-resolution gas chromatography
HRMS	high-resolution mass spectrometry
HS	headspace
HSA	human serum albumin
HSGC	high-speed gas chromatography
HTA	hexdecyltrimethylammonium
HTS	high-throughput screening
Hyp	hydroxyproline
Hz	hertz

I

IC	ion chromatography
ICAT	isotope-coded affinity tag
ICP	inductively coupled plasma
ICR	ion cyclotron resonance
ID	internal diameter
IDA	iminodiacetic acid
IDA	1-methoxycarbonylindolizine 3,5-dicarbaldehyde
IEC	ion-exchange chromatography

IEF	isoelectric focusing
IgG	immunoglobulin G
Ile	isoleucine
IMAC	immobilized-metal-ion affinity chromatography
IMP	ion-moderated partitioning
in.	inch = 2.54 cm
InsP	inositol phosphate
IP	ion pair
IPC	isopycnic centrifugation
IPG	immobilized pH gradient
IR	infrared, isotope ratio
ISEC	inverse size-exclusion chromatography
ITMS	ion-trap mass spectrometry
ITP	isotachophoresis

K

K	kelvin
kbp	kilobase pair = 10^3 base pairs
kDa	kilodalton = 10^3 daltons
KDO	3-deoxy-D-*manno*-octulosonic acid
kPa	kilopascal = 10^3 pascal

L

L	liter, lambert
LALLS	low-angle laser-light scattering
LAS	linear alklbenzenesulfonate
LC	liquid chromatography
LC-CAP	liquid chromatography at the critical adsorption point
LC-CC	liquid chromatography at the critical condition
LCM	laser capture microdissection
LCR	ligase chain reaction
LDL	low-density lipoproteins
LEC	ligand-exchange chromatography
Leu	leucine
LIF	laser-induced fluorescence
LIMS	laboratory information management system
LINAC	linear accelerating high-pressure collision cell
L/L	liquid/liquid
LLC	liquid/liquid chromatography
LLE	liquid/liquid extraction
LOD	limit of detection
LOQ	limit of quantification
LOSI	limit of spectroscopic identification
LPA	linear polyacrylamide
LPA	lysophosphatidic acid
LRMS	low-resolution mass spectrometry
LSC	liquid/solid chromatography
LSD	light-scattering detector

LSIMS	liquid secondary-ion mass spectrometry
Lys	lysine

M

M	molar
m	meter
μ	micro
μLC	micro liquid chromatography
MA	methamphetamine
mA	milliampere = 10^{-3} A
μA	microampere = 10^{-6} A
MACS	magnetic-activated cell sorting
MADGE	microplate-array diagonal gel electrophoresis
MAE	microwave-assisted extraction
MAG	monoacylglycerol
MALDI	matrix-assisted laser desorption ionization
MALS	multi-angle light scattering
MAM	monoacetylmorphine
MBBr	monobromobimane
MBDB	*N*-methylbenzoxodialolylbutanamine
Mbp	megabase pair = 10^6 bp
M-chamber	micro-chamber
MC	methylcellulose
MCA	metal chelate affinity
MCIC	metal chelate interaction chromatography
MCT	mercury-cadmium telluride
MD	multi-dimensional
MDA	methylenedioxyamphetamine
MDEA	methylenedioxyethylamphetamine
MDGC	multi-dimensional gas chromatography
MDMA	methylenedioxymethamphetamine
MDMAES	mono(dimethylaminoethyl)succinyl
Me	methyl
MEC	micellar electrochromatography
MEEKC	micro-emulsion electrokinetic chromatography
MEKC	micellar electrokinetic capillary chromatography
MEMS	micro-electromechanical system
MEP	4-mercaptoethylpyridine
MES	morpholinoethane sulfonate
Met	methionine
meq	milliequivalent = 10^{-3} equivalent
μeq	microequivalent = 10^{-6} equivalent
MG	morphine glucuronide
MIMS	membrane-introduction mass spectrometry
min	minutes
MIP	microwave-induced plasma, molecularly imprinted polymer
MISPE	molecular imprint solid-phase extraction
mg	milligram = 10^{-3} g
mL	milliliter = 10^{-3} L

μL	microliter = 10^{-6} L
mm	millimeter 10^{-3} M
μm	micrometer = 10^{-6} m
m*M*	millimolar 10^{-3} *M*
μmol	micromol = 10^{-6} mol
MMS	micromembrane suppressor
MOPS	3-(*N*-morpholino)propanesulfonic acid
MP	medium pressure
MPa	megapascal = 10^{6} Pa
MP	methyl prednisolone
MPS	methyl prednisolone hemisuccinate
MRA	mass-rate attenuator
MRM	multiple-reaction monitoring
mRNA	messenger RNA
MS	mass spectrometry
MS^n	multiple mass spectrometry
MSA	methanesulfonic acid
msec	millisecond = 10^{-3} sec
MS/MS	tandem mass spectrometry
MS^n	multiple mass spectrometry
MSPD	matrix solid-phase dispersion
μTAS	micro total analysis system
MTBA	methyl tetrabutyl ether
MUX	multiplex
mV	millivolt = 10^{-3} V
mW	milliwatt = 10^{-3} W
mw	molecular weight
MWD	molecular mass distribution
mu	mass units

N

N	normal
nA	nanoampere = 10^{-9} ampere
NADP	nicotinamide adenine dinucleotide phosphate
NBP	norbuprenorphine
NC	norcodeine
NCA	*N*-carboxyanhydride
N-chamber	normal chamber
NCI	negative chemical ionization
NDA	naphthalene 2,3-dicarboxaldehyde
NEFA	nonesterified fatty acids
NG	nitroglycerin
ng	nanogram = 10^{-9} g
NICI	negative-ion chemical ionization
nL	nanoliter = 10^{-9} L
nm	nanometer = 10^{-9} m
NM	normorphine
NMIFA	non-methylene-interrupted fatty acids
nmol	nanomol = 10^{-9} mol

NMR	nuclear magnetic resonance
NOM	natural organic matter
NP	nonylphenol
NP	normal-phase
NPC	normal-phase chromatography
NPEC	nonylphenol carboxylates
NPEO	nonylphenol ethoxylates
NPD	nitrogen/phosphorus detector
NPLC	normal-phase liquid chromatography
NSAID	non-steroidal anti-inflammatory drugs
NSIC	non-suppressed ion chromatography
NTA	nitrilotriacetic acid

O

O	olfactometry
oaTOF-MS	orthogonal-acceleration time-of-flight mass spectrometry
OCEC	open-channel electrochromatography
OD	outside diameter
OP	octylphenol
OPA	*o*-phthaldialdehyde
OPEC	octylphenol carboxylates
OPEO	octylphenol ethoxylates
OPLC	overpressured-layer chromatography
OQ	operational qualification
ORM	overlapping resolution mapping
OT	open-tubular
OVM	ovomucoid

P

Pa	pascal = 10^{-5} bar
pA	picoampere = 10^{-12} A
PAD	pulsed-amperometric detector
PAE	phthalate esters
PAF	platelet-activating factor
PAGE	polyacrylamide gel electrophoresis
PAS	photoacoustic spectrometry
PAH	polycyclic aromatic hydrocarbons
PAN	4-(2-pyridylazo)naphthol
PANI	polyaniline
PAR	4-(2-pyridylazo)resorcinol
PATRIC	position- and time-resolved ion counting
PB	particle beam
PBA	phenylboronic acid
PBD	poly(butadiene)
PBDE	polybrominated diphenyl ethers
PBS	phosphate-buffered saline
PC	planar chromatography, personal computer, poly(bisphenol A carbonate)
PCA	principal component analysis
PCB	poly(chlorinated biphenyls)

PCDD	poly(chlorinated dibenzo-*p*-dioxins)
PCDF	poly(chlorinated dibenzofurans)
PCI	positive chemical ionization
PCR	post-column reagent, polymerase chain reaction
PCS	photon correlation spectroscopy
PCSE	partially concurrent solvent evaporation
PD	polydispersity
pd	pressure-driven
PDA	photodiode array
PDD	pulse-discharge detector
PDDAC	poly(diallyldimethylammonium) chloride
PDECD	pulsed-discharge electron-capture detector
PDMA	poly(*N,N*-dimethylacrylamide)
PDMS	poly(dimethylsiloxane)
PDPID	pulsed-discharge photoionization detector
PEC	pressurized capillary electrochromatography
PED	pulsed-electrochemical detector
PEEK	poly(ether ethyl ketone)
PEG	poly(ethylene glycol)
PEI	poly(ethylene imine)
PEMA	poly(ethylmethacrylate)
PEO	poly(ethylene oxide)
PETN	pentaerythritol tetranitrate
PFB	pentafluorobenzoyl
PFE	pressurized-fluid extraction
PFPD	pulsed flame-photometric detector
pg	picogram $= 10^{-12}$ g
PGC	porous graphitic carbon
Ph	phenyl
PHB	poly(3-hydroxybutyrate)
PHBV	poly(3-hydroxybutyrate-co-3-hydroxyvalerate)
Phe	phenylalanine
PI	polyisoprene
pI	isoelectric point
PIBM	poly(isobutylmethacrylate)
PICES	passive *in situ* concentration/extraction sampler
PICI	positive-ion chemical ionization
PID	photoionization detector
pL	picoliter $= 10^{-12}$ L
PLE	pressurized-liquid extraction
PLOT	porous-layer open-tubular
PMA	poly(methacrylate)
PMD	programmed multiple development
PMMA	poly(methylmethacrylate)
pmol	picomol $= 10^{-12}$ mol
PMP	1-phenyl-3-methyl-5-pyrazolone
PMT	photomultiplier tube
PNB	*p*-nitrobenzylhydroxylamine
POP	persistent organic pollutants

ppb	parts per billion = 10^{-9} parts
PPCP	pharmaceuticals and personal-care products
ppm	parts per million = 10^{-6} parts
ppt	parts per trillion = 10^{-12} parts
PPO	poly(propylene oxide)
ppq	parts per quadrillion = 10^{-15} parts
Pr	propyl
Pro	proline
PrP	prion protein
PS	polystyrene
Ps	phosphatides
psi	pounds per square inch = 51.77 torr
PtdCho	phosphatidylcholine
PtdIns	phosphatidylinositols
PTFE	poly(tetrafluoroethylene)
PTH	phenylisothiocyanate
PTV	programmed-temperature vaporizer
PUFA	polyunsaturated fatty acids
PVA	poly(vinyl alcohol)
PVAc	poly(vinyl acetate)
PVC	poly(vinyl chloride)
PVDF	poly(vinylidene fluoride)
PVP	poly(vinylpyrrolidone)

Q

QAP	quaternary ammonium phosphates
QqQ	triple quadrupole
QSAR	quantitative structure/activity relationships
QTOF-MS	quadrupole time-of-flight mass spectrometry

R

r	recombinant
RAM	restricted access medium
Ref.	Reference
RF	radiofrequency
RFLP	restriction-fragment-length polymorphism
RI	refractive index
RIA	radio-immuno assay
RID	refractive-index detector
RNA	ribonucleic acid
ROMP	ring-opening metathesis polymerization
RP	reversed-phase
RPC	reversed-phase chromatography, rotation planar chromatography
rpm	rotations per minute
RRA	radio-receptor assay
RRF	relative response factor
RSD	relative standard deviation
RT	retention time
RT-PCR	real-time polymerase chain reaction

S

S	siemens
SAMBI	α-methylbenzyl isothiocyanate
satd.	saturated
SAX	strong-anion exchange
SB	short-bed
SB	sulfobetaine
SBSE	stir-bar sorptive extraction
S-chamber	sandwich chamber
SCD	sulfur chemiluminescence detector
SDE	simultaneous steam distillation/solvent extraction
SCAN	sample concentrator and neutralizer
SCOT	support-coated open-tubular
SCX	strong-cation exchange
SD	standard deviation
SDA	strand displacement amplification
SDM	stoichiometric displacement model
SDS	sodium dodecyl sulfate
sec	seconds
SEC	size-exclusion chromatography
SEEC	size-exclusion electrochromatography
SELDI	surface-enhanced laser-desorption ionization
Ser	serine
SERS	surface-enhanced Raman spectroscopy
SFC	supercritical-fluid chromatography
SFE	supercritical-fluid extraction
SGC	solvating gas chromatography
SIC	self-interaction chromatography
SIC	suppressed-ion chromatography
SID	surface-ionization detection
SIM	single-ion monitoring, selected-ion monitoring
SIMS	secondary-ion mass spectrometry
SLAB	inter-laboratory standard deviation
SLE	solid/liquid extraction
SLM	supported-liquid membrane
SM	sphingomyelin
SMA	steric mass action
S/N ratio	signal-to-noise ratio
SNEIT	1-(1-naphtyl)-ethyl isothiocyanate
SNP	single-nucleotide polymorphism
SPC	sulfophenylcarboxylate
SPE	solid-phase extraction
SPMD	semi-permeable membrane device
SPME	solid-phase micro-extraction
SPR	surface plasmon resonance
sq.	square
SRM	selective reaction monitoring
SRS	self-regenerating suppressor
SSCP	single-strand conformation polymorphism

SSDNA	single-stranded DNA
SSO	sequence-specific oligonucleotide
STP	sewage treatment plant
STR	short tandem repeats

T

T	thymine
TAG	triacylglycerol
TAPS	3-*tris*[(hydroxymethyl)methylamino] 1-propanesulfate
TAS	total analysis system
TBA	tetrabutylammonium
TBMB	(*S*)-(+)-2-*tert*-butyl-2-methyl-1,3-benzodioxole
TBP	tributyl phosphine
TBQCA	3-(4-tetrazolbenzoyl) 2-quinolinecarboxyaldehyde
TBE	Tris/borate/EDTA
t-BOC	*N*-*tert*-butyloxycarbonyl
tert-BOOH	*tert*-butyl hydroperoxide
TCA	trichloroacetic acid
TCD	thermal conductivity detector
TCDD	tetrachlorodibenzo-*p*-dioxin
TEA	thermal-energy analyzer
TEAA	triethylammonium acetate
TEAF	triethylammonium formate
TEAP	triethylammonium phosphate
TED	triscarboxymethyl ethylenediamine
TEMED	N,N,N',N'-tetramethylethylenediamine
temp.	temperature
TEPA	tetraethylenepentamine
TFA	trifluoroacetic acid
TFC	turbulent-flow chromatography
TFE	trifluoroethanol
TGGE	temperature-gradient gel electrophoresis
TGIC	temperature-gradient interaction chromatography
THC	tetrahydrocannabinol
THCA	tetrahydrocannabinolic acid
THCCOOH	11-nor-Δ^9-tetrahydrocannabinol 9-carboxylic acid
THF	tetrahydrofuran
Thr	threonine
TIC	total-ion chromatogram
TIE	toxicity identification evaluation
TID	thermionic ionization detector
TLC	thin-layer chromatography
TMAE	trimethylaminoethyl
TMAOH	trimethylammonium hydroxide
TMS	trimethylsilyl
TMSO	trimethylsiloxy
TNP	trinitrophenyl
TNT	trinitrotoluene
TOF-MS	time-of-flight mass spectrometry

TPA	tetrapentylammonium 3-[*tris*(hydroxymethyl) methylamino] 1-propanesulfate
Tris	tris(hydroxymetyl)aminomethane
TRITC	tetramethylrhodamine isothiocyanate
Trp	tryptophan
TSI	thermospray ionization
TTA	tetradecyltrimethylammonium
Tyr	tyrosine

U

U	uracil
UCC	universal calibration curve
U-chamber	ultra-micro chamber
UV	ultraviolet

V

V	volt
Val	valine
VBC	vinylbenzyl chloride
vis.	visible range
VNTR	variable number of tandem repeats
vol.	volume
2VP	2-vinylpyridine
v/v	volume-by-volume
vWF	Van Willebrand Factor

W

W	watt
WCOT	wall-coated open-tubular
w/w	weight-by-weight
WWCOT	whiskered-wall-coated open-tubular

X

XNP	halogenated nonylphenols

List of Italic Symbols

(Subscripts and superscripts are not always listed)

A	
a	activity
A_s	surface area of the stationary phase
$A^{(k)}$	surface area of phase k
B	
B_0	chromatographic permeability
b	ion-binding coefficient
C	
C	concentration
C_i	counter-ion concentration
C_m, C_M	solute concentration in the mobile phase
C_s, C_S	solute concentration in the stationary phase
COF	chromatographic optimization function
CRF	chromatographic response function
CRS	chromatographic resolution statistic
D	
D	diffusion coefficient, diffusivity, displacing ion
D_{hb}	energy of the hydrogen bond
D_M	diffusion coefficient in the mobile (gas) phase
d	dimension
d_c	diameter of the channel
d_{col}	column diameter
d_{conn}	connector diameter
d_{det}	flow-cell diameter
d_f	stationary-phase film thickness
d_p	particle diameter
E	
E	electric field strength
e	charge on an electron
F	
F	Faraday constant, net flow-rate
f/f_0	frictional ratio
G	
G	Gibbs free energy
ΔG	change in free energy
g	surface tension, activity coefficient
$g(r)$	pair distribution function
H	
H	column efficiency, plate height, enthalpy