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*The New
Agilent
1290
Infinity
Ii Lc*

To succeed in the
lab, it is crucial to
be comfortable
with the math

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calculations that
are part of
everyday work.
This accessible
introduction to
common
laboratory
techniques
focuses on the
basics, helping
even readers with
good math skills to

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practice the most frequently encountered types of problems. Basic Laboratory Calculations for Biotechnology, Second Edition discusses very common laboratory problems, all

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applied to real situations. It explores multiple strategies for solving problems for a better understanding of the underlying math. Primarily organized around laboratory applications, the

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book begins with more general topics and moves into more specific biotechnology laboratory techniques at the end. This book features hundreds of practice problems, all with solutions and

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many with boxed,
complete
explanations; plus
hundreds of "story
problems" relating
to real situations in
the lab. Additional
features include:

Discusses
common
laboratory
problems with all

Where To
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material applied to
real situations
Presents multiple
strategies for
solving problems
help students to
better understand
the underlying
math Provides
hundreds of
practice problems
and their solutions

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Enables students
to complete the
material in a self-
paced course
structure with little
teacher assistance
Includes hundreds
of "story
problems" that
relate to real
situations
encountered in the

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laboratory
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Analysis of
Pesticide in Tea: C
hromatography-
Mass
Spectrometry
Methodology is a
comprehensive
book, providing
serial, rapid, high-
throughput
analytical methods

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for determining
more than 600
pesticides in tea.
There are
increasing
numbers of strict
limit standards for
pesticide residues
in edible
agricultural
products in
countries all over

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the world. The threshold for pesticide residues in tea is high for international trade. At present, 17 countries and international organizations have stipulated MRL levels for over 800 pesticide residues

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in tea. All methods
described in this
book are validated
by an
independent,
U.S.-based
organization
(AOAC
International), and
all indexes have
satisfied AOAC
International's

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criteria. China has a history of 5000 years in growing tea and is a large tea producer with 80 million people involved in tea growing. China exports tea to over 100 countries worldwide, enjoying a high

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reputation for
quality and variety.

Covers a wide
range of research
activities that are
highly appropriate
to current research
methods Reflects
the most recent
research in nearly
all cases, providing
an excellent

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compilation of
feasible methods
needed for official
analysis Describes
methods that are
internationally
validated by an
independent,
U.S.-based
organization
(AOAC
International)

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Authored by Dr.
Pang, who is
internationally
recognized in the
area of pesticide
residues and other
contaminants in
foods

Over the last few
decades, the study
of microbial
biofilms has been

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gaining interest among the scientific community. These microbial communities comprise cells adhered to surfaces that are surrounded by a self-produced exopolymeric

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matrix that protects
biofilm cells
against different
external stresses.
Biofilms can have
a negative impact
on different sectors
within society,
namely in
agriculture, food
industries, and
veterinary and

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human health. As a consequence of their metabolic state and matrix protection, biofilm cells are very difficult to tackle with antibiotics or chemical disinfectants. Due to this problem, recent advances in

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the development of antibiotic alternatives or complementary strategies to prevent or control biofilms have been reported. This book includes different strategies to prevent biofilm formation or to

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control biofilm
development and
includes full
research articles,
reviews, a
communication,
and a perspective.
Enzymatic
Polymerizations,
Volume 627 in the
Methods in
Enzymology

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series, continues the legacy of this premier serial with quality chapters authored by leaders in the field. Provides the authority and expertise of leading contributors from an international

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Includes the latest
information on
Enzymatic
Polymerizations
2019 National
Institute of Justice
Forensic Science

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Research and
Development

Symposium

Optimization in
HPLC

Designing Efficient
Catalysts for

Synthesis

Sample

Preparation in
Metabolomics

HPLC for

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Pharmaceutical
Scientists

*A concise yet
comprehensive
reference guide on
HPLC/UHPLC that
focuses on its
fundamentals, latest
developments, and
best practices in the
pharmaceutical and
biotechnology*

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Infinity II LC
industries Written for
practitioners by an
expert practitioner,
this new edition of
*HPLC and UHPLC
for Practicing
Scientists* adds
numerous updates to
its coverage of high-
performance liquid
chromatography,
including
comprehensive
information on

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*Infinity LC
UHPLC (ultra-high-pressure liquid chromatography) and the continuing migration of HPLC to UHPLC, the modern standard platform. In addition to introducing readers to HPLC's fundamentals, applications, and developments, the book describes basic*

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theory and terminology for the novice, and reviews relevant concepts, best practices, and modern trends for the experienced practitioner. HPLC and UHPLC for Practicing Scientists, Second Edition offers three new chapters. One is a standalone chapter on UHPLC,

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covering concepts,
benefits, practices,
and potential issues.
Another examines
liquid chromatograp
hy/mass
spectrometry
(LC/MS). The third
reviews at the
analysis of
recombinant
biologics,
particularly
monoclonal

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antibodies (mAbs),
used as therapeutics.
While all chapters
are revised in the
new edition, five
chapters are
essentially rewritten
(HPLC columns,
instrumentation,
pharmaceutical
analysis, method
development, and
regulatory aspects).
The book also

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includes problem and
answer sections at
the end of each
chapter. Overviews
fundamentals of
HPLC to UHPLC,
including theories,
columns, and
instruments with an
abundance of tables,
figures, and key
references Features
brand new chapters
on UHPLC, LC/MS,

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*and analysis of
recombinant
biologics Presents
updated information
on the best practices
in method
development,
validation, operation,
troubleshooting, and
maintaining
regulatory
compliance for both
HPLC and UHPLC
Contains major*

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Infinity II LC
revisions to all
chapters of the first
edition and
substantial rewrites
of chapters on HPLC
columns,
instrumentation,
pharmaceutical
analysis, method
development, and
regulatory aspects
Includes end-of-
chapter quizzes as
assessment and

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*learning aids Offers a
reference guide to
graduate students
and practicing
scientists in
pharmaceutical,
biotechnology, and
other industries
Filled with intuitive
explanations, case
studies, and clear
figures, HPLC and
UHPLC for
Practicing Scientists,*

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Second Edition is an essential resource for practitioners of all levels who need to understand and utilize this versatile analytical technology. It will be a great benefit to every busy laboratory analyst and researcher.

The poster abstracts accepted for the 71st

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*AACC Annual
Scientific Meeting &
Clinical Lab Expo.
AACC is a global
scientific and
medical professional
organization
dedicated to clinical
laboratory science
and its application to
healthcare. Our
leadership in
education, advocacy
and collaboration*

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helps lab professionals adapt to change and do what they do best: provide vital insight and guidance so patients get the care they need.

Metabolomics is a rapidly emerging field in life sciences, which aims to identify and quantify metabolites in a

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biological system.

Analytical chemistry
is combined with
sophisticated
informatics and
statistics tools to
determine and
understand
metabolic changes
upon genetic or
environmental
perturbations.

Together with other
'omics analyses, such

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as genomics and proteomics, metabolomics plays an important role in functional genomics and systems biology studies in any biological science. This book will provide the reader with summaries of the state-of-the-art of technologies and methodologies,

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Infinity II LC
especially in the data
analysis and
interpretation
approaches, as well
as give insights into
exciting applications
of metabolomics in
human health
studies, safety
assessments, and
plant and microbial
research.

*This Special Issue
aims to highlight the*

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dual potential of novel biocatalytic processes, where the first part is dedicated to waste valorization for the production of high value products, while the second part is focused on the detoxification of pollutants. Several examples of microbial systems employed for the

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valorization of waste streams derived by the forest, agricultural, and food industries or the use of whole-cell or enzyme approaches for the removal of nitrogen or dyes from industrial wastewaters are provided. Last but not least, an example of the utilization of p

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polyhydroxyalkanoates
(PHAs) was
highlighted for the
production of fatty
acids, which were
used for the
enzymatic synthesis
of sugar esters with
antimicrobial
properties.

High Performance
Liquid

Chromatography

An insight into the

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*metabolism of New
Psychoactive
Substances
Structural elucidatio
n of urinary
metabolites of
synthetic
cannabinoids and
fentanyl analogues
using synthesized
reference standards
Strategies for
Identification and
Control*

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71st AACC Annual
Scientific Meeting &
Clinical Lab Expo
New Frontiers in
Acrylamide Study in
Foods

***HPLC for
Pharmaceutical
Scientists is an
excellent book for
both novice and
experienced
pharmaceutical
chemists who***

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Infinity II LC
***regularly use HPLC
as an analytical tool
to solve challenging
problems in the
pharmaceutical
industry. It provides
a unified approach
to HPLC with an
equal and balanced
treatment of the
theory and practice
of HPLC in the
pharmaceutical
industry. In-depth***

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***discussion of
retention processes,
modern HPLC
separation theory,
properties of
stationary phases
and columns are
well blended with
the practical aspects
of fast and effective
method
development and
method validation.
Practical and***

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***pragmatic
approaches and
actual examples of
effective
development of
selective and
rugged HPLC
methods from a
physico-chemical
point of view are
provided. This book
elucidates the role
of HPLC throughout
the entire drug***

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***development
process from drug
candidate inception
to marketed drug
product and gives
detailed specifics of
HPLC application in
each stage of drug
development. The
latest advancements
and trends in
hyphenated and
specialized HPLC
techniques (LC-MS,***

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***LC-NMR,
Preparative HPLC,
High temperature
HPLC, high pressure
liquid
chromatography)
are also discussed.
How can I use my
HPLC/UHPLC
equipment in an
optimal way, where
are the limitations of
the technique?
These questions are***

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***discussed in detail
in the sequel of the
successful "HPLC
Expert" in twelve
chapters written by
experts in the
respective fields.
The topics
encompass -
complementary to
the first volume -
typical HPLC users'
problems and
questions such as***

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***gradient
optimization and
hyphenated
techniques (LC-MS).***

***An important key
aspect of the book
is UHPLC: For which
analytical problem is
it essential, what
should be
considered?***

***Besides
presentation of
latest developments***

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***directly from the
main manufacturers,
also UHPLC users
and independent
service engineers
impart their
knowledge.***

***Consistent with the
target groups, the
level is advanced,
but the emphasis is
on practical
applications.***

Issues in Analysis,

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**Measurement,
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and Remote Sensing
Technology: 2011
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Measurement,
Monitoring, Imaging,
and Remote Sensing**

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editors have built
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and Remote Sensing
Technology: 2011
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and Remote Sensing
Technology in this
eBook to be deeper
than what you can
access anywhere
else, as well as
consistently reliable,
authoritative,
informed, and
relevant. The
content of Issues in
Analysis,***

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**Measurement,
Monitoring, Imaging,
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information is*

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available at <http://www.ScholarlyEditions.com/>.

Parasitic weeds are severe constraint to agriculture and major crop production, and the efficacy of available means to control them is minimal. Control strategies have centred around agronomic

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practices, resistant varieties and the use of herbicides. Novel integrated control programmes should be sympathetic to agricultural extensification while exerting minimal harmful effects on the environment. This eBook covers recent advances in biology, physiology

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***of parasitism,
genetics, population
dynamics,
resistance, host-
parasite
relationships,
regulation of seed
germination, etc., in
order to offer an
outstanding
windows to these
enigmatic plants,
and contribute to
their practical***

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management.

*Find and Optimize
the Benefits of your
HPLC / UHPLC
Concepts and
Strategies
Natural Products-
Based Drugs:
Potential
Therapeutics
against Alzheimer's
Disease and other
Neurological
Disorders*

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**Formation, Analysis
and Exposure
Assessment
Chromatography-
Mass Spectrometry
Methodology
Basic Laboratory
Calculations for
Biotechnology**

The 2019
National
Institute of
Justice (NIJ)

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Forensic
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Science

Research and
Development
(R&D)

Symposium is
intended to
promote
collaboration
and enhance
knowledge
transfer of

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NIJ-funded research. The NIJ Forensic Science R&D Program funds both basic or applied R&D projects that will (1) increase the body of knowledge to

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guide and
Infinity II LC
inform

forensic
science policy
and practice
or (2) result
in the
production of
useful
materials,
devices,
systems, or

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methods that
have the
potential for
forensic
application.
The intent of
this program
is to direct
the findings
of basic
scientific
research;

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research and
development in
broader
scientific
fields
applicable to
forensic
science; and
ongoing
forensic
science
research

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toward the
development of
highly discrim-
inating,
accurate,
reliable, cost-
effective, and
rapid methods
for the identi-
fication,
analysis, and
interpretation

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of physical
evidence for
criminal
justice
purposes.

Written by
experts in the
field, this is
a much-needed
overview of
the rapidly
emerging field

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of cooperative
catalysis. The
authors focus
on the design
and
development of
novel high-per
formance
catalysts for
applications
in organic
synthesis

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(particularly asymmetric synthesis), covering a broad range of topics, from the latest progress in Lewis acid / Brønsted base catalysis to e.g.

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metal-assisted
organo
catalysis,
cooperative
metal/enzyme
catalysis, and
cooperative
catalysis in
polymerization
reactions and
on solid
surfaces. The

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chapters are
classified
according to
the type of
cooperating
activating
groups, and
describe in
detail the
different
strategies of
cooperative

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activation,
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highlighting
their
respective
advantages and
pitfalls. As a
result,
readers will
learn about
the different
concepts of
cooperative

Where To Download The New Agilent 1290 Infinity II LC catalysis, their

corresponding
modes of
operation and
their
applications,
thus helping
to find a
solution to a
specific
synthetic

Where To
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catalysis
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problem.

The European
Food Safety
Agency (EFSA)
has identified
acrylamide as
a public
health concern
due to its
relation with
the appearance

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of different
types of
cancer, and
continued
efforts are
required to
reduce
exposure to
acrylamide
(EFSA, 2015).
During the
last few

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years, EFSA
has maintained
a high level
of supervision
to monitor the
acrylamide
levels in
processed
products,
urging
companies to
implement

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effective
mitigation
strategies for
reducing
formation of
this
contaminant.
Recently, the
European
Commission has
published a
regulation

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that sets
mitigation
measures for
the reduction
of this
compound in
foods,
identifying
new benchmark
levels for a
number of food
categories

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(European
Commission,
2017). The
Regulation
2158/2017
compels food
processors and
food business
operators in
Europe to
reduce the
presence of

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acrylamide in
their

products,
applying
measures
proportionate
to the size
and nature of
the establishm
ents. With the
goal of
providing

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information
that

contributes to
our
understanding
for this
process
contaminant
and exposure
through
dietary
routes, this

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Special Issue
explores the
recent
advances on
the study of
acrylamide in
foods,
including
novel insights
into the
chemistry of
its formation

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and
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elimination,
effective
mitigation
strategies,
conventional
and innovative
monitoring
techniques,
risk/benefit
approaches,
and exposure

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assessment.

This

proceeding is
indeed the
result of
remarkable
cooperation of
many
distinguished
experts, who
came together
to contribute

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their research
work and

comprehensive,
in-depth and
up to date
review
articles. We
are thankful
to all the
contributing
authors and co-
authors for

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their valued
contribution
to this book.
We would also
like to
express our
gratitude to
all the
publishers and
authors and
others for
granting us

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the copyright
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2013

International
Conference on
Biological,
Medical and
Chemical
Engineering
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which will be held on December 1-2, 2013, Hong Kong, aims to provide a forum for accessing to the most up-to-date and authoritative knowledge from

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both
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Biological,
Medical and
Chemical
Engineering.
The dynamic
Hong Kong,
officially the
Hong Kong
Special
Administrative
Region of the

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People's
Republic of
China, is a
largely self-
governing
territory of
the People's
Republic of
China (PRC),
facing the
Guangdong
Province in

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the north and
the South
China Sea to
the east, west
and south.

Under the "one
country, two
systems"

policy, Hong
Kong enjoys
considerable
autonomy in

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all areas with
the exception
of foreign
affairs and
defense (which
are the
responsibility
of the PRC
Government).
As part of
this
arrangement,

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Hong Kong
continues to
maintain its
own currency,
separate
legal,
political
systems and
other aspects
that concern
its way of
life, many of

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which are
distinct from
those of
mainland
China. In
relation with
the title of
this
proceeding,
Biological and
Medical
Engineering,

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Developmental
biology,
Environmental
Biology,
Evolutionary
Biology,
Marine
Biology,
Chemistry and
Chemical
Engineering
Fundamentals,

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Chemical
engineering
educational
challenges and
development,
Chemical
reaction
engineering,
Chemical
engineering
equipment
design and

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process
Infinity II LC
design, Thermo
dynamics,
Catalysis &
reaction
engineering,
Advances in
computational
& numerical
methods,
Systems
biology,

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Integration of
Life Sciences
& Engineering,
Multi-scale
and Multi-
disciplinary
Approaches,
Controlled
release of the
active
ingredient,
Energy &

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nuclear
Infinity II LC
sciences,
Energy and
environment,
CFD & chemical
engineering,
Food
engineering
etc, has been
targeted and
included in
this

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preceding.

The preceding
is the results
of the
contribution
of a number of
experts from
the
international
scientific
community in
the respective

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Infinity II LC
field of
research.

Natural
Products from
Marine
Microorganisms
TOF-MS Within
Food and
Environmental
Analysis
Cooperative
Catalysis

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Handbook of LC-
MS Bioanalysis
Mutagenic
Impurities
Best
Practices,
Experimental
Protocols, and
Regulations
**Consolidates
the
information**

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**LC-MS
bioanalytical
scientists need
to analyze
small
molecules and
macromolecules**
The field of
**bioanalysis
has advanced
rapidly,
propelled by**

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**new approaches
for
developing
bioanalytical
methods, new li
quid chromatog
raphic (LC)
techniques,
and new mass
spectrometric
(MS) instrume
nts. Moreover,**

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**there are a
host of
guidelines
and regulations
designed to
ensure the
quality of bioa
nalytical result
s. Presenting
the best
practices,
experimental**

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**protocols, and
the latest
understanding
of regulations,
this book
offers a compre
hensive review
of LC-MS
bioanalysis of
small
molecules and
macromolecul**

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**es. It not only
addresses the
needs of bioan
alyticalscientis
ts working on
routine
projects, but
also explores
advancedand
emerging
technologies
such as high-**

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**resolution
mass spectrom
etry and dried
blood spot mic
rosampling.
Handbook of
LC-MS
Bioanalysis
features
contributions
from an
international**

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**team of
leading
bioanalytical
scientists. The
contributions
reflect a
review of the
latest findings,
practices, and
regulations as
well as their
own firsthand**

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**analytical labor
atory
experience.
The book
thoroughly
examines:
Fundamentals
of LC-MS
bioanalysis in
drug
discovery, dru
g development,**

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**and
therapeutic
drug
monitoring
The current
understanding
of regulations
governing LC-
MSbioanalysis
Best practices
and detailed
technical**

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**instructions
for LC-
MSbioanalysis
method
development,
validation, and
stability assess
ment of
analyte(s) of
interest
Experimental
guidelines and**

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**protocols for
quantitative LC-
MSbioanalysis
of challenging
molecules,
including pro-
drugs, acylglu-
curonides, N-
oxides,
reactive
compounds,**

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**and
photosensitive
and autooxidati
ve compounds
With its focus
on current
bioanalytical
practice,
Handbook
of LC-MS
Bioanalysis
enables**

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**bioanalytical
scientists to
develop and
validate robust
LC-MS assay
methods, all in
compliance
with current
regulations
and standards.
New
Psychoactive**

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**Substances
(NPS) is an
umbrella term
covering
hundreds of
substances
across
different drug
groups. Many
of these
substances
were originally**

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**developed for
therapeutic
use but have
later appeared
on the
recreational
drug market.
The use of
NPS has been
associated
with many
outbreaks**

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**leading to hos
pitalizations
and has been
implicated in
numerous
fatalities
worldwide. To
be able to
analytically
detect drugs
in a forensic
setting is vital**

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**in the fight
against the
abuse of NPS.
One of the
most notable
challenges in
detection of
NPS is the
identification
of major
urinary
metabolites**

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**for use as
biomarkers.**

**Furthermore,
given the lack
of reference
standards in
most
metabolism
studies, the
major urinary
metabolites
can often only**

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**be tentatively
determined.**

**This thesis
describes the
synthesis and
analysis of
potential
metabolites
used to
identify the
exact
structures of**

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**major
metabolites of
the synthetic
cannabinoid
AKB-48,
fentanyl and
five fentanyl
analogues in
authentic
human urine
samples
and/or**

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**hepatocyte
incubations.**

**Synthetic
targets were
chosen based
on previous
metabolism
studies by our
research
group.**

**Subsequently,
synthetic**

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**routes were
developed to
produce
numerous
potential
metabolites
across the
studied NPS.**

**The
synthesized
reference
standards**

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**were analyzed
by LC-QTOF-
MS alongside
hepatocyte
drug
incubations
and authentic
human urine
samples.**

**Comparison of
the resulting
analytical data**

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**was used to
determine the
exact
structures of
many
metabolites.
This includes
urinary
metabolites of
AKB-48 with a
single hydroxyl
group situated**

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**on a secondary
carbon of the
adamantane
moiety, or
position 3 or 5
of the pentyl
side chain. For
the studied
fentanyls, the
3'-OH and the
4'-OH
metabolites**

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**were abundant
metabolites
identified in
hepatocyte
incubations
while the
4'-OH,
4'-OH-3'-OMe
and 3',4'-diOH
were the
favored
metabolic**

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**motifs among
the**

**metabolites
identified in
urine.**

**Additionally, a
concise
synthetic
route to
produce
synthetic
cannabinoid**

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**metabolites
with the
4-OH-5F
pentyl side
chain motif
was developed
and
demonstrated
for four
synthetic
cannabinoids.
These findings**

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**and the
developed
synthetic
routes can be
used to
provide
forensic
toxicology
laboratories
with urinary
biomarkers for
drug**

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detection.
Moreover, the
synthesized
reference
standards of
major
metabolites
can be studied
to better
understand
the toxicity of
their parent

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**drugs. Nya
psykoaktiva
substanser
(NPS) är det
officiella
namnet för
den grupp
droger som
tidigare har
kallats för desi
gnerdroger,
nätdroger eller**

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**internetdroger
. NPS
definieras som
droger som
utgör ett
likvärdigt hot
mot folkhälsan
som droger
som återfinns
på Förenta
Nationernas n
arkotikakonve**

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**ntioner men
som själva inte
återfinns
under dessa
konventioner.
Det finns
hundratals
olika
rapporterade
NPS spridda
över olika
droggrupper,**

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**såsom
syntetiska
cannabinoider
och syntetiska
opioider. Vissa
av dessa
droger
syntetiserades
ursprungligen
i forskningssyfte,
men tog sig
senare in på**

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Infinity II LC

**den illegala dr
ogmarknaden.
De mer
nyligen
framtagna
NPS är ofta
designade att
efterlikna
effekterna av
etablerade
droger, såsom
morfin eller**

Where To
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Infinity II LC

**?9-THC, vilket
är den**

**huvudsakliga
psykoaktiva
substansen i
cannabis.**

**Användandet
av NPS har
associerats till
många kluster
av
intoxikationer**

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**som har lett
till hospitalise
ringar. Många
har även dött
till följd av
användandet
av NPS. Inte
minst i USA
där en grupp
av NPS kallad
för fentanylan
aloger är**

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**högst delaktig
i den
pågående
opioidkrisen.
Den ständiga
inströmningen
av nya NPS
leder till att
detektion av
och
diskriminering
mellan dem**

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New Agilent 1290
Infinity II LC

**utgör en svår
utmaning för
forensiska toxi
kologilaborato
rier.**

**Tillgången av
lämpliga refer
enssubstanser
möter inte
deras
efterfrågan,
delvis på**

Where To
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New Agilent 1290
Infinity II LC

**grund av att
vilka
biomarkörer
som är
optimala för
drogdetektion
inte alltid är
uppenbart. Till
exempel så är
metabolismen
av syntetiska
cannabinoider**

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**i regel både
snabb och
omfattande. Av
den
anledningen
kan
användandet
av modersubst
ansen som
biomarkör vid
analys av urin
leda till falskt**

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Infinity II LC

**negativa
resultat. Urin
som biologisk
matris har
många
fördelar
jämfört med
blod. Till
exempel så har
urin ett längre
detektionsfön-
ster och högre**

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Infinity II LC

**drogkoncentra
tioner. För att
kunna
identifiera
optimala
biomarkörer
för droganalys
av urinprover
så måste
drogernas
metabolism
utredas. De**

Where To
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Infinity II LC

**flesta metaboli
smstudier
använder sig
av humana lev
ermikrosomer
eller
hepatocyter
som inkuberas
tillsammans
med droger för
att generera
metaboliter in**

Where To
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Infinity II LC

vitro.

**Urinprover
från individer i
vilkas blod det
har
återfunnits
droger
används också
men
tillgången är
tyvärr
begränsad.**

Where To
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New Agilent 1290

**Dessa
metaboliter
separeras
sedan med
hjälp av kroma-
tografiska
tekniker och
deras kemiska
strukturer
bestäms med
hjälp av massp-
ektrometri.**

Where To
Download The
New Agilent 1290
Infinity II LC

**Dock så är
utvärderingen
av masspektro
metridata
komplicerad
och det är
heller inte
möjligt att
skilja på vissa
positionsisome
rer genom att
enbart**

Where To
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Infinity II LC
**analysera mas
spektrometrid
ata. För att
kunna
möjliggöra
exakt struktur
utredning så
krävs referens
standarder.
Därför var
målet med
denna**

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Infinity II LC

**avhandling att
addera syntes
och analys av r
eferensstandar
der till de
etablerade tillv
ägagångssätte
n att studera
metabolismen
av NPS. Ett
stort antal
potentiella**

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**metaboliter av
AKB-48 och
andra
syntetiska
cannabinoider
samt av
fentanyl och fe
ntanylanaloger
syntetiserades.
Genom att
använda dessa
referensstanda**

Where To
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**rder i metaboli
smstudier så
kunde de
exakta
kemiska
strukturerna
för många
metaboliter
bestämmas.
Dessutom så
identifierades
mönster i de**

Where To
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**metaboliska
profilerna
bland fentanyl
och fentanylan
aloger. Dessa
mönster kan
användas för
att förbättra
predikteringen
av metaboliter
för andra
nuvarande och**

Where To
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Infinity II LC

**kommande fen
tanylaloger.
Dessa resultat
samt de
utvecklade
syntesvägarna
kan nyttjas i fr
amställningen
av referenssub
stanser i syfte
att användas
som**

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**biomarkörer
för att i urin
kunna
detektera
drogmissbruk.
Referenssubst
anserna kan
även användas
för att studera
metaboliternas
farmakologisk
a egenskaper**

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**vilket kan leda
till en djupare
förståelse
kring
toxiciteten hos
modersubstan
serna.**

**Mycotoxins
are secondary
metabolites
produced by
the fungi of**

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**different
species
(mainly
Aspergillus,
Fusarium, and
Penicillium),
with toxic
effects for
humans and
animals. These
mycotoxins
can**

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**contaminate
food and feed.
The European
Union (EU)
has
established
the maximum
permitted or
recommended
levels for well-
known
mycotoxins in**

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**different
foodstuffs.**

**However,
there are
other
mycotoxins
that are not
included in the
regulations:
the “emerging
mycotoxins”
(whose toxicity**

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**is still not
clear), and the
“modified or
masked
mycotoxins”
(produced as a
consequence
of a
detoxification
strategy of the
host plant of
the fungus or**

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**during food
processing).**

**These
mycotoxins
could pose a
risk and
should also be
taken into
account. In
order to
assure
consumers'**

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**health,
analytical
methods for
the accurate
determination
of mycotoxins
in different
food matrices
and feeds are
required. In
this sense,
liquid chromat**

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**ography
tandem mass
spectrometry
(LC-MS/MS) is
a powerful tool
for their
unique
identification
and
quantification.
Moreover, the
use of high-**

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resolution
Infinity II LC
mass

spectrometry
(HRMS) allows
one to identify
novel
mycotoxins
and targeted/u
ntargeted
approaches for
study. This
Special Issue

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compiles
recent

**applications of
LC-MS/MS in
mycotoxin
studies, as
well as the
development
and validation
of new
analytical
methods for**

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**their
identification
and
quantification
in different
food matrices
and feed,
occurrence
studies, and
the
biomonitoring
of mycotoxins**

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**and their
metabolites in
biological
fluids.**

**Learn to
implement
effective
control
measures for
mutagenic
impurities in p
harmaceutical**

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**development
In Mutagenic
Impurities:
Strategies for
Identification
and Control,
distinguished
chemist
Andrew
Teasdale
delivers a
thorough**

Page 172/285

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**examination of
mutagenic
impurities and
their impact
on the pharma
ceutical
industry. The
book
incorporates
the adoption
of the ICH M7
guideline and**

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**focuses on
mutagenic
impurities
from both a
toxicological
and analytical
perspective.
The editor has
created a
primary
reference for
any**

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**professional or
student
studying or
working with
mutagenic
impurities and
offers readers
a definitive
narrative of
applicable
guidelines and
practical,**

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**tested
solutions. It
demonstrates
the
development
of effective
control
measures,
including
chapters on
the purge tool
for risk**

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assessment.

**The book
incorporates a
discussion of
N-
Nitrosamines
which was
arguably the
largest
mutagenic
impurity issue
ever faced by**

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**the pharmaceutical industry,
resulting in
the recall of
Zantac and
similar drugs
resulting from
N-Nitrosamine
contamination
. Readers will
also benefit
from the**

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**inclusion of: A
thorough
introduction
to the
development
of regulatory
guidelines for
mutagenic and
genotoxic
impurities,
including a
historical**

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**perspective on
the
development
of the EMEA
guidelines and
the ICH M7
guideline An
exploration of
in silico
assessment of
mutagenicity,
including use**

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**of structure
activity
relationship
evaluation as a
tool in the
evaluation of
the genotoxic
potential of
impurities A
discussion of a
toxicological
perspective on**

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**mutagenic
impurities,
including the
assessment of
mutagenicity
and examining
the mutagenic
and
carcinogenic
potential of
common
synthetic**

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reagents
Infinity II LC

**Perfect for
chemists,
analysts, and
regulatory
professionals,
Mutagenic
Impurities:
Strategies for
Identification
and Control
will also earn a**

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**place in the
libraries of
toxicologists
and clinical
safety
scientists
seeking a one-
stop reference
on the subject
of mutagenic
impurity
identification**

Where To
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and control.

**Metabolomics
Principles and
Practical
Applications
Theory, Instru-
mentation and
Application in
Drug Quality
Control
Microbial
Stress: From**

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**Model
Organisms to
Applications in
Food, Microbio
technology
and Medicine
Antioxidant
Activity of
Polyphenolic
Plant Extracts
New
Challenges in**

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Marine Pollution

Monitoring

The emergence of marine and freshwater toxins in geographical areas where they have never been reported before is a concern due to the

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considerable
impact on
(sea)food
contamination,
and
consequently, on
public health.
Several groups
of marine
biotoxins, in
particular
tetrodotoxins,
ciguatoxins, and
palytoxins, are

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included among the relevant marine biotoxins that have recently emerged in several coastal areas. A similar situation has been observed in freshwater, where cyanobacterial toxins, such as

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microcystins,
could end up in
unexpected areas
such as the
estuaries where
shellfish are
cultivated.

Climate change
and the
increased
availability of
nutrients have
been considered
as the key

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factors in the
expansion of all
of these toxins
into new areas;
however, this
could also be
due to more
intense
biological
invasions, more
sensitive
analytical
methods, or
perhaps even an

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increased scientific interest in these natural contaminations. The incidences of human intoxications due to the consumption of seafood contaminated with these toxins have made

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their study an important task to accomplish in order to protect human health.

This Special Issue has a focus on a wide variety of emerging biotoxin classes and techniques to identify and quantify them.

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This volume provides a straightforward approach to isolation and purification problems with a thorough presentation of preparative LC strategy including the interrelationship between the

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input and output
of the

instrumentation,
while keeping to
an application

focus. The book
stresses the

practical
aspects of
preparative

scale
separations from
TLC isolations
through various

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laboratory scale
column
separations to
very large scale
production. It
also gives a
thorough
description of
the performance
parameters (e.g.
throughput,
separation
quality, etc.)
as a function of

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operational parameters (e.g. particle size, column size, solvent usage, etc.). Experts in the field have contributed a well balanced presentation of separation development strategies from preparative TLC

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to commercial
preparative
process with
practical
examples in a
wide variety of
application
areas such as
drugs, proteins,
nucleotides,
industrial
extracts,
organic
chemicals,

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enantiomers,
polymers, etc.

Prof. Dharini
Sivakumar was
previously an
Associate
Partner at
Simfresh
International an
agribusiness
development
company. All
other Topic
Editors declare

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no competing
interests with
regard to the
Research Topic
subject.

“Antioxidant
Activity of
Polyphenolic
Plant Extracts”
is a collection
of scientific
articles
regarding
polyphenols,

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that is, substances occurring naturally in plants and exhibiting many beneficial effects on human health. Among polyphenols' interesting biological properties, their

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antioxidant activity is considered the most important. This book brings together experts from different research fields on topics related to polyphenols, such as their isolation and purification,

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assessment of
their
antioxidant
activity,
prevention from
oxidative stress-
induced diseases
and use as food
additives. The
polyphenols used
in the present
studies are
derived from a
great variety of

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plants, ranging from well-known species to rare ones that are only found in specific regions.

Moreover, some of the studies provide evidence that polyphenols may be used for the prevention and treatment of

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common diseases
such as diabetes
mellitus,
Alzheimers'
disease,
cardiovascular
and intestinal
diseases.

Importantly, in
several of the
studies "green
extraction
methods" for the
isolation of

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polyphenols were developed using modern technologies, where few or no organic solvents were used, in order to minimize environmental and health impacts.

Wine

Traceability

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Flavonoids and
Their Disease
Prevention and
Treatment
Potential

2013

International
Conference on
Biological,
Medical and
Chemical

Engineering
(BMCE2013)

Enzymatic

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Polymerizations
New Insights on
Biofilm

Antimicrobial
Strategies

Two-Dimensional
Liquid

Chromatography

This Issue contains
one

communication, six
articles, and two
reviews. The
communication

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from Paola Vitale et al. represents a work where whole cells were used as biocatalysts for the reduction of optically active chloroalkyl arylketones followed by a chemical cyclization to give the desired heterocycles.

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Among the various
whole cells

screened (baker's
yeast,

Kluyveromyces
marxianus CBS
6556,

Saccharomyces
cerevisiae CBS

7336, Lactobacillus
reuteri DSM

20016), baker's

yeast provided the
best yields and the

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highest
enantiomeric
ratios (95:5) in the
bioreduction of the
above ketones. In
this respect,
valuable chiral non-
racemic
functionalized
oxygen-containing
heterocycles (e.g.,
(S)-styrene oxide, (
(S)-2-phenyloxetane
, (S)-2-phenyltetra

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hydrofuran),
amenable to be
further elaborated
on, can be
smoothly and
successfully
generated from
their prochiral
precursors.

Studies about pure
biocatalysts with
mechanistical
studies, application
in different

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reactions, and new
immobilization
methods for
improving their
stability were
reported in five
different articles.
The article by Su-
Yan Wang et al.
describes the
cloning,
expression,
purification, and
characterization of

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an N-
Infinity LC
acetylglucosamine
2-epimerase from
Pedobacter
heparinus
(PhGn2E). For this,
several N-acylated
glucosamine
derivatives were
chemically
synthesized and
used to test the
substrate
specificity of the

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enzyme. The mechanism of the enzyme was studied by hydrogen/deuterium NMR. The study at the anomeric hydroxyl group and C-2 position of the substrate in the reaction mixture confirmed the epimerization reaction via ring-

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opening/enolate
formation. Site-
directed
mutagenesis was
also used to
confirm the
proposed
mechanism of this
interesting
enzyme. The
article by Forest H.
Andrews et al.
studies two
enzymes,

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benzoylformate
decarboxylase
(BFDC) and
pyruvate
decarboxylase
(PDC), which
catalyze the non-
oxidative
decarboxylation of
2-keto acids with
different
specificity. BFDC
from *Pseudomonas*
putida exhibited

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very limited activity with pyruvate, whereas the PDCs from *S. cerevisiae* or from *Zymomonas mobilis* showed virtually no activity with benzoylformate (phenylglyoxylate). After studies using saturation mutagenesis, the

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BFDC
T377L/A460Y

variant was obtained, with 10,000-fold increase in pyruvate/benzoylformate. The change was attributed to an improvement in the K_m value for pyruvate and a decrease in the k_{cat} value for

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benzoylformate.

The
characterization of
the new catalyst
was performed,
providing context
for the observed
changes in the
specificity. The
article by Xin
Wang et al.
compares two
types of
biocatalysts to

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produce D-lysine L-lysine in a cascade process catalyzed by two enzymes: racemase from microorganisms that racemize L-lysine to give D,L-lysine and decarboxylase that can be in cells, permeabilized cells, and the isolated enzyme.

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The comparison between the different forms demonstrated that the isolated enzyme showed the higher decarboxylase activity. Under optimal conditions, 750.7 mmol/L D-lysine was finally obtained from 1710 mmol/L L-

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lysine after 1 h of racemization reaction and 0.5 h of decarboxylation reaction. D-lysine yield could reach 48.8% with enantiomeric excess (ee) of 99%. In the article by Rivero and Palomo, lipase from *Candida rugosa* (CRL) was highly

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stabilized at alkaline pH in the presence of PEG, which permitted its immobilization for the first time by multipoint covalent attachment on different aldehyde-activated matrices. Different covalent immobilized preparation of the enzyme was

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successfully
obtained. The
thermal and
solvent stability
was highly
increased by this
treatment, and the
novel catalysts
showed high
regioselectivity in
the deprotection of
per-O-acetylated
nucleosides. The
article by Robson

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Carlos Alnoch et al. describes the protocol and use of a new generation of tailor-made bifunctional supports activated with alkyl groups that allow the immobilization of proteins through the most hydrophobic region of the

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protein surface
and aldehyde
groups that allows
the covalent
immobilization of
the previously
adsorbed proteins.
These supports
were especially
used in the case of
lipase
immobilization.
The immobilization
of a new

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metagenomic lipase (LipC12) yielded a biocatalyst 3.5-fold more active and 5000-fold more stable than the soluble enzyme. The PEGylated immobilized lipase showed high regioselectivity, producing high yields of the C-3

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monodeacetylated product at pH 5.0 and 4 °C. Hybrid catalysts composed of an enzyme and metallic complex are also treated in this Special Issue. The article by Christian Herrero et al. describes the development of the Mn(TpCPP)-Xln10A artificial

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metalloenzyme,
obtained by non-
covalent insertion
of Mn(III)-meso-tet-
rakis(p-carboxyphe-
nyl)porphyrin
[Mn(TpCPP),
1-Mn] into
xylanase 10A from
Streptomyces
lividans (Xln10A).
The complex was
found able to
catalyze the

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selective photo-
induced oxidation
of organic
substrates in the
presence of
 $[\text{RuII}(\text{bpy})_3]^{2+}$ as
a photosensitizer
and
 $[\text{CoIII}(\text{NH}_3)_5\text{Cl}]^{2+}$
as a sacrificial
electron acceptor,
using water as
oxygen atom
source. The two

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published reviews describe different subjects with interest in the fields of biocatalysis and mix metallic-biocatalysis, respectively. The review by Anika Scholtissek et al. describes the state-of-the-art regarding ene-

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reductases from the old yellow enzyme family (OYEs) to catalyze the asymmetric hydrogenation of activated alkenes to produce chiral products with industrial interest. The dependence of OYEs on pyridine nucleotide coenzyme can be

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avoided by using
nicotinamide
coenzyme
mimetics. In the
review, three main
classes of OYEs
are described and
characterized. The
review by Yajie
Wang and Huimin
Zhao highlights
some of the recent
examples in the
past three years

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that combine
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transition metal
catalysis with
enzymatic
catalysis. With
recent advances in
protein
engineering,
catalyst synthesis,
artificial
metalloenzymes,
and
supramolecular
assembly, there is

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great potential to
develop more
sophisticated
tandem
chemoenzymatic
processes for the
synthesis of
structurally
complex chemicals.
In conclusion,
these nine
publications give
an overview of the
possibilities of

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different catalysts, both traditional biocatalysts and hybrids with metals or organometallic complexes to be used in different processes—particularly in synthetic reactions—under very mild reaction conditions.

Preparative Liquid

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ChromatographyEl
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sevier

The range of
human
neurodegenerative
diseases continues
to pose significant
unmet medical
needs for societies
around the world.
The progressive
and terminal
nature of these
conditions places a

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considerable
personal burden on
the individual
affected but also
on public health
systems and health
services. Tens of
millions of people
are
indiscriminately
affected by various
dementias, which
are rising at an
alarming rate.

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There are no cures for many conditions, and it is clear that treatments applied as early as possible could greatly improve outcomes for patients.

Therefore, new disease classification and diagnostic tools should be a key

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priority.

Metabolomics
represents a
relatively new field
of analytical
science, which can
be extremely
useful in the early
diagnosis of
disease. The
relatively unique
feature of
metabolites is that
they sit at the

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intersection
between the
genetic
background of an
organism and its
environment.
Because many
neurodegenerative
diseases are not
genetically
inherited (instead
having a range of
known genetic risk
factors and also a

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large number of
unknown
environmental
triggers) the field
of metabolomics
offers great
promise for the
discovery of new,
biologically, and
clinically relevant
biomarkers for
neurodegenerative
disorders. It is
already bringing

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forward new
knowledge in
terms of the
mechanisms of
neurodegenerative
disease.

Metabolomics is
increasingly being
used to explore the
dynamic responses
of living systems in
biochemical
research. The
complexity of the

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metabolome is outstanding, requiring the use of complementary analytical platforms and methods for its quantitative or qualitative profiling. In alignment with the selected analytical approach and the study aim, sample

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collection and preparation are critical steps that must be carefully selected and optimized to generate high-quality metabolomic data. This book showcases some of the most recent developments in the field of sample

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preparation for
metabolomics
studies. Novel
technologies
presented include
electromembrane
extraction of polar
metabolites from
plasma samples
and guidelines for
the preparation of
biospecimens for
the analysis with
high-resolution μ

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magic-angle
spinning nuclear
magnetic
resonance (HR- μ MAS NMR). In
the following
chapters, the
spotlight is on
sample preparation
approaches that
have been
optimized for
diverse
bioanalytical

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applications,
including the
analysis of cell
lines, bacteria,
single spheroids,
extracellular
vesicles, human
milk, plant natural
products and
forest trees.

Plant Foods and
Dietary
Supplements:
Building Solid

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Foundations for
Clinical Trials
Analysis of
Pesticide in Tea
Food and Nutrition
Security:
Underutilized Plant
and Animal-Based
Foods
The HPLC Expert
II
Advances in
Parasitic Weeds
Research

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Asymmetric and
Selective
Biocatalysis

*New developments in
mass spectrometry have
allowed routine
identification and
lowered limits of
detection at levels only
imagined a decade ago.
Thousands of
contaminants and
residues in the food
supply and the*

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*environment are now
being reported. Between
2005 and 2010, more
than 5,000 publications
covering TOF-MS and
environmental and food
analysis were published,
showing the importance
of the technique in
these applications. This
book covers the basic
principles of method
development in GC- and
LC-TOF-MS as well as*

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the main operational parameters related to TOF-MS. The second part focuses on the relevant environmental applications, including quality control aspects as well as data collection. The third part is devoted to relevant applications in food analysis, including validation procedures for screening analysis

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*as well as relevant
databases. Outlines
basic concepts and
principles of gas and
liquid chromatography
TOF-MS and its
application in food
analysis Includes
quality control and data
collection techniques
Focuses on
environmental
implications and safety
concerns*

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Natural products continue to serve as sources for the development of new medicines. There is currently a revival of interest in the discovery of bioactive compounds with new chemical structures from natural sources, largely due to the fact that synthetic libraries have not yielded the expected

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*number of
developmental
candidates in the
pharmaceutical
industry during the last
decade. In addition, the
emergence of clinically
relevant pathogens that
are becoming
increasingly resistant to
currently used
medicines strengthens
the notion that natural
product research is*

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urgently required.

*Considering the fact
that almost 10% of
bioactive compounds
are of microbial origin,
and that marine
microorganisms are
relatively poorly studied
compared to their
terrestrial relatives,
marine microorganisms
are regarded as the
most potential-laden
resource for drug*

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discovery.

This book addresses the growing interest in the field of two-dimensional liquid chromatography (2DLC), a powerful approach to increasing resolution, available peak capacity, and selectivity in analytical chromatography. 2DLC is suitable for many applications, including

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*in the pharmaceutical
and polymer industries
and the omic sciences
(metabolomics,
lipidomics and
proteomics). Thanks to
recent advances in
technology and
software the
instrumentation needed
to perform 2D-LC is
broadly available to the
analytical community in
both industry and*

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academia. Indeed, the technique can now be considered ready for application in R&D as well as in QA and QC labs, yet it is not widely known about outside academic laboratories and is rarely taught at the undergraduate level. This book outlines the main principles and features of 2D-LC (including

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*comprehensive and
heart-cutting modes,
method development
and real world
applications) to enable
modern analysts to start
using this fascinating
technique. The book
offers an ideal starting
point for those wishing
to get into 2D-LC and
will also be of interest
to more experienced
scientists in the field.*

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Flavonoids are ubiquitously present in plant-based foods and natural health products. The molecule of flavonoids is characterized by a 15-carbon skeleton of C6–C3–C6, with the different structural configuration of subclasses. The major subclasses of flavonoids with health-

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promotional properties are the flavanols or catechins (e.g., epigallocatechin 3-gallate from green tea), the flavones (e.g., apigenin from celery), the flavonols (e.g., quercetin glycosides from apples, berries, and onion), the flavanones (e.g., naringenin from citrus), the

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anthocyanins (e.g., cyanidin-3-O-glucoside from berries), and the isoflavones (e.g., genistein from soya beans). Scientific evidence has strongly shown that regular intake of dietary flavonoids in efficacious amounts reduces the risk of oxidative stress- and chronic inflammation-

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*mediated pathogenesis
of human diseases such
as cardiovascular
disease, certain cancers,
and neurological
disorders. The
physiological benefits
of dietary flavonoids
have been demonstrated
to be due to multiple
mechanisms of action,
including regulating
redox homeostasis,
epigenetic regulations,*

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*activation of survival
genes and signaling
pathways, regulation of
mitochondrial function
and bioenergetics, and
modulation of
inflammation response.
The role of flavonoids
on gut microbiota and
the impact of microbial
metabolites of
flavonoids on optimal
health has begun to
unravel. The complex*

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physiological modulations of flavonoid molecules are due to their structural diversity. However, some flavonoids are not absorbed well, and their bioavailability could be enhanced through structural modifications and applications of nanotechnology, such as encapsulation. This

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*Special Issue consists of
four review articles on
flavonoids and 15
original research
articles, which cover the
latest findings on the
role of dietary
flavonoids and their
derivatives in disease
prevention and
treatment.*

*HPLC and UHPLC for
Practicing Scientists
Application of LC-*

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*MS/MS in the
Mycotoxins Studies
Issues in Analysis,
Measurement,
Monitoring, Imaging,
and Remote Sensing
Technology: 2011
Edition*

*Emerging Marine
Biotoxins
Analytical Chemistry
Editor's Pick 2021
Preparative Liquid
Chromatography*

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The book provides an indispensable guide on how to use HPLC in pharmaceutical analysis and drug control. Following a hands-on approach, the authors give practical advices how to

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prepare

stationary and

mobile phases,

choose a

suitable

detector and set

up an HPLC

analysis. The

publication

gives insight

into the key

pharmaceutical

applications of

HPLC and the

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*latest
requirements of
the major
regulatory
agencies.*

*Learn to
maximize the
performance of
your HPLC or
UHPLC system
with this
resource from
leading experts
in the field*

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*Optimization in
HPLC: Concepts
and Strategies
delivers tried-
and-tested
strategies for
optimizing the
performance of
HPLC and UHPLC
systems for a
wide variety of
analytical
tasks. The book
explains how to*

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*optimize the
different HPLC
operation modes
for a range of
analyses,
including small
molecules,
chiral
substances, and
biomolecules. It
also shows
readers when and
how
computational*

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tools may be
used to optimize
performance. The
practice-
oriented text
describes common
challenges faced
by users and
developers of
HPLC and UHPLC
systems, as well
as how those
challenges can
be overcome.

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*Written for
first-time and
experienced
users of HPLC
technology and
keeping pace
with recent
developments in
HPLC
instrumentation
and operation
modes, this
comprehensive
guide leaves few*

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questions
unanswered.

*Readers will
also benefit
from the
inclusion of: A
thorough
introduction to
optimization
strategies for
different modes
and uses of
HPLC, including
working under*

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*regulatory
constraints An
exploration of
computer aided
HPLC
optimization,
including
ChromSwordAuto
and Fusion QbD A
treatment of
current
challenges for
HPLC users in
industry as well*

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as large and
small analytical
service
providers

Discussions of
current
challenges for
HPLC equipment
suppliers Tailor-
made for
analytical
chemists, chroma-
tographers,
pharmacologists,

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*toxicologists,
and lab
technicians,
Optimization in
HPLC: Concepts
and Strategies
will also earn a
place on the
shelves of
analytical
laboratories in
academia and
industry who
seek a one-stop*

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reference for
optimizing the

performance of
HPLC systems.

Wine

*traceability is
a central theme
in the current
world market
where consumers
are increasingly
demanding the
quality and
origin of food*

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*and drink. The
wine production
chain and wine
composition are
generally
controlled by
different laws
(International
Organization of
Vine and Wine
(OIV), European
Union (EU), and
national
governments) and*

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need specific
documentation.

Nevertheless,
wine production
is subject to
fraud.

Consequently,
the improvement
of the methods
applied to
verify the
origin and
quality of wines
is very

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*important to
protect wine
consumers and
producers. In
this book, eight
different
papers—six
research papers
and two
reviews—address
the topic from
different points
of view.*

From Remediation

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to Waste
Valorization
Environmental
Biocatalysis
Metabolomics in
Neurodegenerativ
e Disease
Metabolism Meets
Function: The
Multifaced Role
of Metabolism in
Cancer