



Gas Plasma Sterilization in Microbiology

Theory, Applications, Pitfalls and New Perspectives

Edited by: Hideharu Shintani and Akikazu Sakudo

viii + 158 pages, January 2016

Book: ISBN 978-1-910190-25-8, £129 / US\$259

Ebook: ISBN 978-1-910190-26-5, £129 / US\$259

The book opens with introductory chapters that explain the background and principles of gas plasma sterilization and outline the possible mechanisms of action. Requirements for achieving the 'gold-standard' sterilization level i.e. a sterility assurance level (SAL) of 10^{-6} , is also covered. The next eight chapters cover applications of this technology: these range from the inactivation of spores and endotoxins to inactivation of viruses and seed-borne plant pathogens. The final chapters tackle sterilization validation (from several ISO documents), common data-interpretation errors and speculate about future trends. This book is an indispensable reference for students, microbiologists, engineers, and laboratory scientists interested in sterilization and decontamination.

- Introduction.
- Theoretical Background and Mode of Action of Gas Plasma Sterilization.
- Concomitant Achievement of a Sterility Assurance Level of 10^{-6} with Material and Functional Compatibility by Gas Plasma Sterilization.
- Current Progress in Advanced Technology of Nitrogen Gas Plasma for Remote Sterilization and Clarification of Sterilization.
- Current Progress in the Inactivation of Endotoxin and Lipid A by Exposure to Nitrogen Gas Plasma.
- Current Progress in Advanced Research into Tetrodotoxin Inactivation by Gas Plasmas.
- Current Progress in Advanced Research into Fungal and Mycotoxin Inactivation by Cold Plasma Sterilization.
- Current Progress in the Sterilization of Spores and Vegetative Cells by Exposure to Gas Plasma: Sterilization, Disinfection and Antimicrobial Activity.
- Current Progress in Advanced Research into the Inactivation of Fungi and Yeasts by Gas Plasma.
- Current Progress in Advanced Research into the Inactivation of Viruses by Gas Plasma: Influenza Virus Inactivation by Nitrogen Gas Plasma.
- Current Technology and Applications of Gas Plasma for Disinfection of Agricultural Products: Disinfection of Fungal Spores on Citrus unshiu by Atmospheric Pressure Dielectric Barrier Discharge.
- Current Progress in Seed Disinfection by Gas Plasma: Disinfection of Seed-borne Fungi and Bacteria by Plasma with Alternating Current High Voltage Discharge.
- Validation of Gas Plasma Sterilization (Importance of ISO documents, ISO TC 198 and 194).
- Misinterpretation of Microbiological Data on Gas Plasma Sterilization: Avoiding the Pitfalls.
- Future Perspectives and Trends in Gas Plasma Sterilization

Further details at: www.caister.com/gasplasma



Biofilms in Bioremediation

Current Research and Emerging Technologies

Edited by: Gavin Lear

x + 252 pages, March 2016

Book: ISBN 978-1-910190-29-6, £159 / US\$319

Ebook: ISBN 978-1-910190-30-2, £159 / US\$319

- Engineering Successful Bioremediation.
- The Biofilm Concept from a Bioremediation Perspective.
- Biofilm Survival Strategies in Polluted Environments.
- Tactic Responses of Bacteria to Pollutants: Implications for the Degradation Efficiency of Microbial Biofilms.
- Whole-cell Biosensors for Monitoring Bioremediation.
- Modern Methods in Microscopy for the Assessment of Biofilms and Bioremediation.
- Molecular Methods for the Assessment of Microbial Biofilms in Bioremediation.
- Biofilm-mediated Degradation of PAHs and Pesticides.
- Detoxification of Hexavalent Chromium from Industrial Wastewater using a Bacterial Biofilm System.
- Hydrocarbonoclastic Biofilms.
- Use of Biofilm Permeable Reactive Barriers for the *In Situ* Remediation of Mobile Contaminants.
- Comparison of the Degradation Activity of Biofilm-associated Versus Planktonic Cells.
- Using Microbial Biofilms to Enhance the Phytoremediation of Contaminants in Soil and Water. Part A: A Trial for Sustainable Phenol Degradation by Duckweed-colonizing Biofilms.
- Using Microbial Biofilms to Enhance the Phytoremediation of Contaminants in Soil and Water. Part B: The Sustainable Biodegradation of Phenolic Endocrine-disrupting Chemicals by Bacteria in the Rhizosphere of *Phragmites australis*.



Aquatic Biofilms

Ecology, Water Quality and Wastewater Treatment

Edited by: Anna M. Romaní, Helena Guasch and M. Dolores Balaguer

xii + 230 pages, January 2016

Book: ISBN 978-1-910190-17-3, £159 / US\$319

Ebook: ISBN 978-1-910190-18-0, £159 / US\$319

- Limits of the Biofilm Concept and Types of Aquatic Biofilms.
- Laser Microscopy for the Study of Biofilms: Issues and Options.
- Interactions and Communication Within Marine Biofilms.
- Microbial Biodiversity in Natural Biofilms.
- Aquatic Biofilms and Biogeochemical Processes.
- Benthic Diatom Monitoring and Assessment of Freshwater Environments: Standard Methods and Future Challenges.
- The Use of Biofilms to Assess the Effects of Chemicals on Freshwater Ecosystems.
- Biofilm Development in Sewer Networks.
- Biofilm Biodegradation Potential.
- Electroactive Biofilms in Water and Air Pollution Treatment.
- Biofilms for One-stage Autotrophic Nitrogen Removal.

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MALDI-TOF Mass Spectrometry in Microbiology

Edited by: Markus Kostrzewa and Sören Schubert
c. 200 pages, July 2016
Book: ISBN 978-1-910190-41-8, £159 / US\$319
Ebook: ISBN 978-1-910190-42-5, £159 / US\$319

- A Personal Vision of the MALDI-TOF-MS Journey from Obscurity to Frontline Diagnostics.
- Matrix Assisted Laser Desorption Ionization Time-of-Flight Mass Spectrometry for the Clinical Laboratory.
- Analysis of Anaerobes and Some Other Fastidious Bacteria.
- Identification, Typing and Susceptibility Testing of Fungi (incl. Yeasts) by MALDI-TOF MS.
- Molecular Typing of Bacteria/Fungi Using MALDI-TOF MS.
- Matrix-assisted Laser Desorption/Ionization Time-of-flight Mass Spectrometry for Determination of Resistance to Antibiotics.
- Application of MALDI-TOF MS in Veterinary and Food Microbiology.
- MALDI-TOF MS for Environmental Analysis, Microbiome Research and as a Tool for Biological Resource Centres.
- The World of Nucleic Acid Based Mass Spectrometry for Microbial and Viral Detection.
- Future Trends and Perspectives of MALDI-TOF Mass Spectrometry in the Microbiology Laboratory.

Essential Reading!

Microbial Biodegradation

From Omics to Function and Application

Edited by: Jerzy Długoński
September 2016
Book: ISBN 978-1-910190-45-6, £159 / US\$319
Ebook: ISBN 978-1-910190-46-3, £159 / US\$319

Topics range from genomics, metagenomics and metatranscriptomics of biodegradation to examples of the applications of recent research

Flow Cytometry in Microbiology

Technology and Applications

Edited by: Martin G. Wilkinson
xii + 218 pages, September 2015
Book: ISBN 978-1-910190-11-1, £159 / US\$319
Ebook: ISBN 978-1-910190-12-8, £159 / US\$319

- Microbial Flow Cytometry: Technology and Applications.
- Microbial Cytometry: What It Was, Is, and May Be.
- Non-Destructive On-Chip Imaging Cytometry Assay for Constructive On-Chip Cellomics Studies.
- Application of Flow Cytometry to Environmental Biotechnology.
- Flow Cytometry and Microbial Community Fingerprinting.
- Application of Flow Cytometry to the Detection of Pathogenic Bacteria.
- The Use of Flow Cytometry to Study Sporeforming Bacteria.
- Flow Cytometry of Yeasts and Other Fungi.
- The Application of Flow Cytometry to the Study of Lactic Acid Bacteria Fermentations.
- Flow Cytometry for Rapid Microbiological Analysis of Drinking Water: From Science to Practice, an Unfinished Story.

"an impressive group of experts" (ProtoView)

Bacteria-Plant Interactions

Advanced Research and Future Trends

Edited by: Jesús Murillo, Boris A. Vinatzer, Robert W. Jackson and Dawn L. Arnold
x + 228 pages, March 2015
Book: ISBN 978-1-908230-58-4, £159 / US\$319
Ebook: ISBN 978-1-910190-00-5, £159 / US\$319

"a timely overview ... Essential reading" (Biotechnol. Agron. Soc. Environ.); "excellent all-round information" (BioSpektrum)

Influenza: Current Research

Highly informative and well referenced.

Climate Change and Microbial Ecology: Current Research and Future Trends

The most important hot-topics in the area of climate change and microbial ecology.

Epigenetics: Current Research and Emerging Trends

"this is one text you don't want to miss" (Epigenie); "up-to-date information" (ChemMedChem)

Advanced Vaccine Research Methods for the Decade of Vaccines

A thorough and up-to-date review of vaccinology research in age of omics technologies. Essential reading.

Microarrays: Current Technology, Innovations and Applications

"a valuable and useful source ... recommended" (Biotechnol. Agron. Soc. Environ.)

Metagenomics of the Microbial Nitrogen Cycle: Theory, Methods and Applications

"a strong overview" (Ringgold)

Proteomics: Targeted Technology, Innovations and Applications

"many excellent chapters" (Doodys)

Molecular Diagnostics: Current Research and Applications

"I would highly recommend this book" (Doodys)

Next-generation Sequencing: Current Technologies and Applications

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Omics in Soil Science

"a recommended reference" (Biotechnol. Agron. Soc. Environ.)

Applications of Molecular Microbiological Methods

"A must for scientists in oil field companies" (Fungal Diversity)

Bacterial Toxins: Genetics, Cellular Biology and Practical Applications

"packed full of detailed information" (Biospektrum)

Oral Microbial Ecology: Current Research and New Perspectives

"essential text" (Beneficial Microbes)

Bioremediation of Mercury: Current Research and Industrial Applications

Reviews the latest research in mercury bioremediation, including the genetic engineering of bacteria and plants.

Foodborne and Waterborne Bacterial Pathogens: Epidemiology, Evolution and Molecular Biology

"a wealth of detailed, up-to-date information" (Microbiol. Today)

Bacterial Spores: Current Research and Applications

"well-written and edited" (Microbiol. Today)

