

Gas Plasma Sterilization in Microbiology

Theory, Applications, Pitfalls and New Perspectives

Edited by

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Caister Academic Press
Norfolk, UK

www.caister.com

British Library Cataloguing-in-Publication Data
A catalogue record for this book is available from the British Library

ISBN: 978-1-910190-25-8 (paperback)

ISBN: 978-1-910190-26-5 (ebook)

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Preface

Gas plasma is the fourth state of matter, alongside solid, liquid and gas. There are many naturally occurring events and man-made products related to gas plasma including aurora and thunderstorms, and high-intensity discharge (HID) headlamp bulbs, oxonizers, semiconductors and solar battery panels. As a result, gas plasma technology is increasingly important in our life.

Among the various technologies, particular attention should be paid to the use of gas plasma in sterilization and disinfection. Gas plasma treatment has helped to minimize the contamination of medical instruments with infectious pathogens and toxins and, thus, the prevention of hospital-acquired infection.

The purpose of this book is to bring together information on the current status and future prospects of the state-of-art physical technique of gas plasma sterilization. The chapters cover basic information on this method of sterilization, applications of gas plasma technology to the inactivation of toxins and pathogens, possible mechanisms of gas plasma sterilization, and verification and validation of the sterilization efficiency of gas plasma, as well as discussing the challenges, limitations, and advantages of gas plasma sterilization, as well as future research perspectives.

This book will provide a standard reference and indispensable roadmap of gas plasma sterilization for students, engineers, and laboratory scientists. I hope that readers will enjoy this book, obtain useful information for their own research, and be inspired by new ideas for future research on gas plasma sterilization.

Akikazu Sakudo

Acknowledgements

I sincerely thank my wife, Miharu Shintani, who supported me during the preparation of this book.

Hideharu Shintani

I am pleased to have the honour of compiling this book together with Dr Shintani and to have been given the opportunity to work with such eminent scientists as the chapter contributors, whose combined effort have made this book possible. In addition, we would like to acknowledge the grant-in-aids, especially grant-in-aid for science and technology research promotion programme for agriculture, forestry, fisheries and food industry, which supports the work published in this book. We also thank the publishers for granting permission to use previously published figures that are included in this book. Finally, we wish to thank Annette Griffin and the other editorial staff at Caister Academic Press for their professionalism and dedication.

Akikazu Sakudo

Gas Plasma Sterilization in Microbiology: Theory, Applications, Pitfalls and New Perspectives. Jan 2016. H Shintani. A Sakudo. Shintani H, Sakudo A (2016) Gas Plasma Sterilization in Microbiology: Theory, Applications, Pitfalls and New Perspectives. London. According to this speculation, sterilized spore figures would remain unchanged. However, these mechanisms remain to be clarified. Future perspectives on the use of gas plasma for sterilization are of interest, as it is possible that appropriate sterility assurance levels can be obtained in parallel with material and functional compatibility. Traditional sterilization methods are often limited in these requirements. Therefore, gas plasma sterilization may prove to be an appropriate alternative sterilization procedure. View. Gas plasma sterilization (Sterrad Sterilization System) (Figure 9-7) allows short instrument turnaround time, has no recognized health hazards, and operates at a low temperature (less than 50°C).⁹ An aqueous solution of hydrogen peroxide is injected into the chamber and converted to gas plasma by radio waves that create an electrical field.⁵ In this field, hydrogen peroxide vapor is. Figure 9-7. Gas plasma sterilization unit (Sterrad) that uses H₂O₂ to generate free radicals, which inactivate microbes. View chapter Purchase book. Read full chapter.