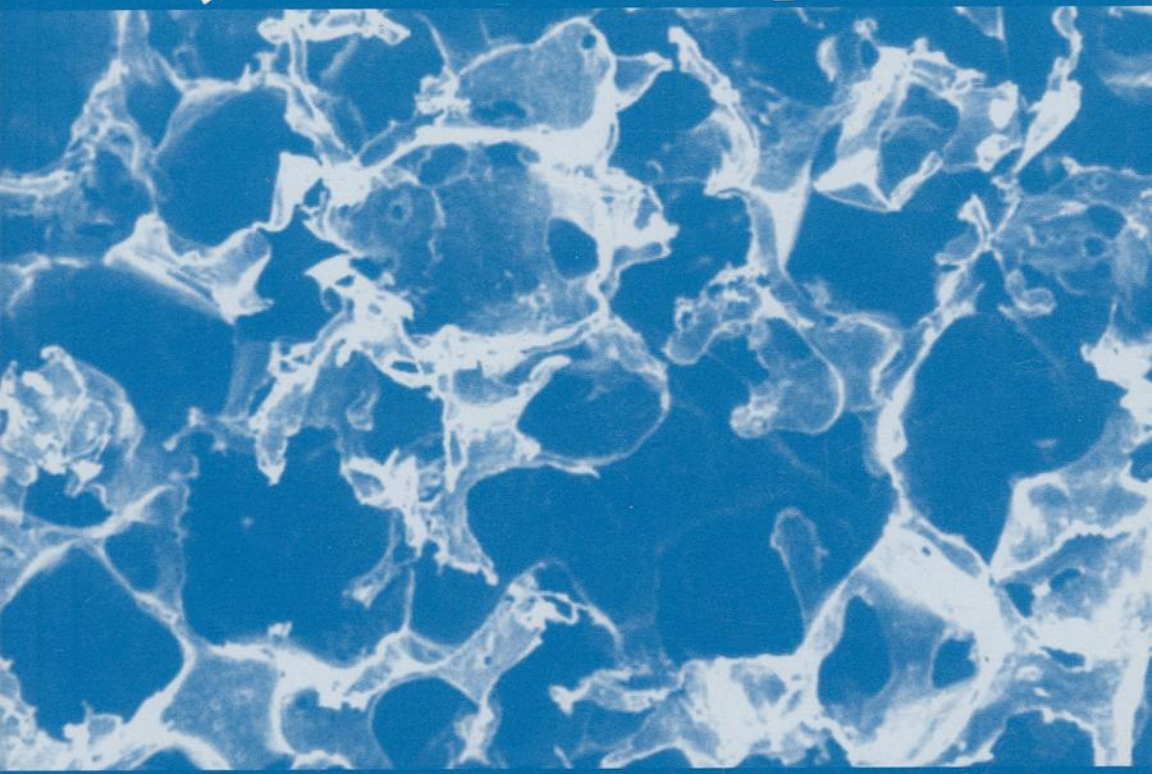
Synthetic Bioabsorbable Polymers for Implants



C. Mauli Agrawal, Jack E. Parr,
and Steve T. Lin, editors

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Foreword

This publication, *Synthetic Bioabsorbable Polymers for Implants,* contains papers presented at the symposium of the same name held in Kansas City, Missouri, on 16–17 November 1999. The symposium was sponsored by ASTM Committee F4 on Medical and Surgical Materials and Devices. The symposium co-chairmen were C. Mauli Agrawal, The University of Texas Health Science Center, Jack E. Parr, Wright Medical Technology, Inc., and Steve T. Lin, Exactech, Inc.

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Overview

Over the past decade, the use of synthetic bioabsorbable polymers in the field of medicine has grown steadily, and it is not uncommon today to find bioabsorbable devices commercially available for use as implants. The popularity of bioabsorbable polymers in medicine stems from the fact that implants fabricated from these materials are absorbed by the body over time. Moreover, the rate of absorption can be designed to meet the needs of the application. This is a significant advantage because nonabsorbable implants often have to be removed surgically after tissue healing has occurred. Also, most synthetic bioabsorbable polymers can easily be injection molded or extruded into a variety of shapes, which facilitates manufacturing and reduces cost.

As the awareness and the concomitant use of bioabsorbable devices increases, there is a need to address issues of novel and new applications, test and characterization techniques for raw materials and devices, efficacy, and long-term effects. The purpose of this symposium was to explore these issues, teach the latest developments in applications and test techniques, and promote the standardization of minimum requirements and test methodologies.

The papers included in this volume covered a variety of topics such as basic polymer properties and characterization, testing techniques, and tissue engineering. At the present time one of the most popular strategies used in tissue engineering is the implantation of a porous biodegradable scaffold at the defect site in the tissue. This scaffold may carry cells or other biomolecular signals to enable tissue regeneration. Synthetic biodegradable polymers are often used for the scaffolds, and thus, play an important role in tissue engineering. Also discussed were various aspects of biodegradable scaffolds. Lastly, bioabsorbable polymers are receiving attention as replacements for metallic fracture fixation devices and systems.

This STP provides an overview of the use of synthetic bioabsorbable polymers in the medical field at the present time. We predict that in the future such materials will play a very significant role as implants.

We would like to thank the ASTM staff (Dorothy Fitzpatrick, Teresa Cendrowska, and Annette Adams) for working so diligently on this project.

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