

Preface

The food industry faces the task of satisfying increasing consumer demands for food that keeps as long as possible while maintaining the required quality. The development of effective scientific and commercial strategies for meeting these goals is not easy. Various technologies and ingredients are used to meet levels of product quality, but it is difficult to test them for the purpose of assessing how food quality will be maintained over the products' intended shelf life. Packaging can play a key role in food product preservation. Therefore, efforts to improve the performances of packaging solutions and preserve food freshness have been spearheaded in diverse fields. Packaging is usually a composite item meeting various needs, and its design is clearly a fundamental part of new products. Considering the importance of packaging in determining product shelf life, the correct approach entails considering, on the same level of importance, product development and its packaging system. This book addresses important issues associated with the nature of packaging and the shelf life characteristics of some important food types. Such information must be organized and made accessible to the target audience.

Three main topics of food packaging are presented and discussed. In particular, a complete overview of mass transport phenomena in polymers intended for food packaging applications is discussed in depth in the first section. With a strong emphasis on principles, this section provides a solid and comprehensive framework for students and practitioners in that it covers the basic concepts of packaging permeation and provides references commonly used to teach packaging. Students will find the first three chapters an excellent base on which to build their understanding of other, more complicated, explanations of the theory of permeation. The second section describes the most relevant approaches to developing eco-friendly active packaging, including recent fabrication methods and technical information on the advantages and limits of techniques, and the underlining systems that could find application in food. The last section surveys how packaging can help prolong shelf life. The strategies are described using different case studies of various food categories. Much of the content relates to the key issues of the microbial and chemical stability of foods and of the sensory changes that occur in

foods in storage. The last four chapters of the book carefully examine issues related to how the quality of raw materials, process conditions, the internal environment created by the packaging system, and the external environment in which food is stored come together to influence the changes that occur in food during storage.

We sincerely hope that this book will help researchers and workers in the many fields related to food packaging, to understand the relevant issues and stimulate further insights.

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