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## Preface

In the summer of 1963, the National Confectioners' Association (NCA) decided to conduct a “candy school”, or Resident Course in Confectionery Science, at the University of Wisconsin-Madison. Fifty-five years later, candy school is still going strong, having been led by only two UW-Madison course directors – Dr. Joe von Elbe (1963–1997) and Dr. Rich Hartel (1998-current). Although the course is now run solely by UW-Madison, without the assistance of NCA, it has maintained a preeminent status throughout the candy industry in the United States, and even beyond.

Candy school is a unique collaboration between the candy industry and UW-Madison. Experienced industry instructors work with UW-Madison faculty to provide both the practical application and the scientific basis of candy making. Each day of the course, one, two, or sometimes three, new instructors, all considered to be experts in their area, travel to Madison to impart their knowledge to the next generation of candy technologists. Each instructor first presents a lecture on the candy category of the day, and then leads a practical lab section. These labs are designed to document how ingredients and processing conditions mutually influence candy qualities, the primary objective of candy school. Since failure is often the best learning tool, some of the lab conditions are designed to “fail”.

With these dedicated industry professionals teaching practical candy making, thirty attendees each year gain practical expertise across a broad range of candy categories. Covering everything from hard candy to chocolate in two weeks, attendees are quickly and completely immersed in candy science and technology. Over the years, more and more science has been injected into candy school as our knowledge of the basic principles of candy-making come to light through research.

In 2003, the Food Science Department at UW-Madison began offering a 3-credit senior level course on candy science. Modeled after the summer candy school, students are led through candy school material throughout the semester. A new candy category is covered each week, from hard candy through chocolate. The primary difference between this course and candy school is that it is more of an academic course, as would be expected for BS Food Science graduates. However, these students also get much of the practical candy-making expertise as well.

This book is the culmination of over a decade of trying to bring these courses to everyone, not just those who can afford the two weeks away from work each summer (it used to be a 3-week course for the first 30 years) or a

semester at UW-Madison. Loosely modeled after the candy school curriculum, the volume is divided into three different sections. In the first section, the physico-chemical bases of the ingredients used in confections are covered. In candy school, the content in these chapters is dispersed throughout the course as needed (rather than having a day or 2 of science principles to start the course). The second section covers the sugar-based confections, in the general order of increasing complexity, or increasing number of ingredient additions made to the sweetener. Finally, the third section covers fat-based confections, namely chocolate and compound coatings.

In this book, we hope to provide a comprehensive summary of candy science and technology. The candy chapters have been designed to provide useful information for both the novice and professional. The first sections of each chapter, covering ingredients and manufacturing practices, should be accessible to readers of all levels. These are followed by more technical sections on microstructure and the important scientific principles that go into making that candy, material nominally targeted to more technically trained readers. The final sections cover shelf life and trouble shooting, providing guidance for all candy makers.

As noted above, putting together this book has been a long and arduous path for the authors. In many ways, this book has been a mountain to get over, requiring a monumental effort. Fortunately, we have had help all along the way. We could not have made this happen without considerable support from a whole host of people, too numerous to mention individually.

Primary thanks go to each candy school instructor who reviewed the chapter(s) for which they are responsible. They are acknowledged at the end of each chapter. Various UW-Madison students have been enlisted over the years to help with book preparation, from literature review to figure construction. Although all merit recognition, one student in particular stands out for her contributions to the figures found throughout the book – Sarah Vogel. Her assistance over the past five years to bring a professional touch to the figures has been an enormous help to get us over this book project mountain.

Finally, we especially acknowledge the entire candy industry for supporting the program, without which this book would not have been possible.

For those who haven't yet been to candy school, we hope this book serves to whet your appetite to learn more by attending our two-week course. For those who have been to candy school, we hope this book supplements those huge course notebooks you had to carry (or ship) home.

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