This book liberates cooks from the constraints of traditional ingredients and methods through the use of pure molecular compounds. 1-Octen-3-ol, which has a scent of wild mushrooms; limonene, a colorless liquid hydrocarbon that has the smell of citrus; sotolon, whose fragrance at high concentrations resembles curry and at low concentrations, maple syrup or sugar; tyrosine, an odorless but flavorful amino acid present in cheese—these and many other substances, some occurring in nature, some synthesized in the laboratory, make it possible to create novel tastes and flavors in the same way that elementary sound waves can be combined to create new sounds. This book aims to add nutritional value to dishes of all kinds, actually improving upon the health benefits of so-called natural foods. Cooking with molecular compounds will be far more energy efficient and environmentally sustainable than traditional techniques of cooking. This new way of thinking about food heralds a phase of culinary evolution on which the long-term survival of a growing human population depends. The text explains the properties of naturally occurring and synthesized compounds, dispels a host of misconceptions about the place of chemistry in cooking.

Eating is a multisensory experience, yet chefs and scientists have only recently begun to deconstruct food's components, setting the stage for science-based cooking. This book advances culinary knowledge by testing hypotheses rooted in the physical and chemical properties
of food. Using traditional and cutting-edge tools, ingredients, and
techniques, the book creates, and sometimes revamps, dishes that
respond to specific desires and serves up an original encounter with
gastronomic practice. From the seemingly mundane to the food fantastic
—from grilled cheese sandwiches, pizzas, and soft-boiled eggs to Turkish
ice cream, sugar glasses, and jellified beads—the book covers a range
of creations and their history and culture. It considers the significance of
an eater's background and dining atmosphere and the importance of a
chef's methods, as well as the strategies used to create a great diversity
of foods and dishes. The book will be of interest to experts and amateurs
alike, especially as restaurants rely more on science-based cooking and
recreational cooks increasingly explore the physics and chemistry behind
their art. Each chapter ends with the author's personal thoughts on food,
cooking, and science, offering rare insight into a professional's passion
for playing with food.