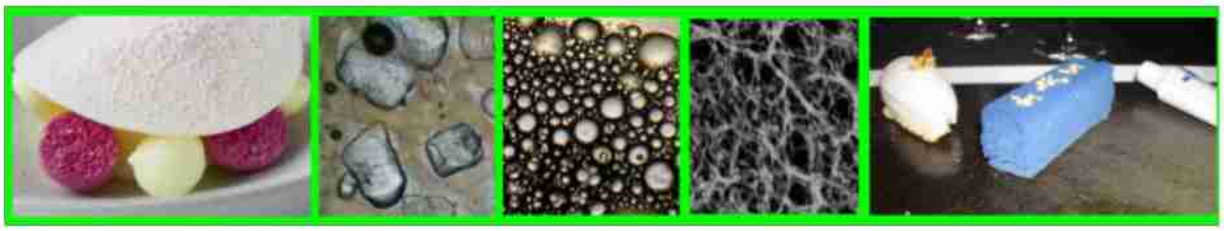

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Book Review

About the book *Molecules, Microbes, and Meals*, by Alan Kelly (Oxford University Press, Oxford, UK).

Thomas A. Vilgis

Max-Planck-Institute for Polymer Research, Ackermannweg 10, 55128 Mainz, Germany

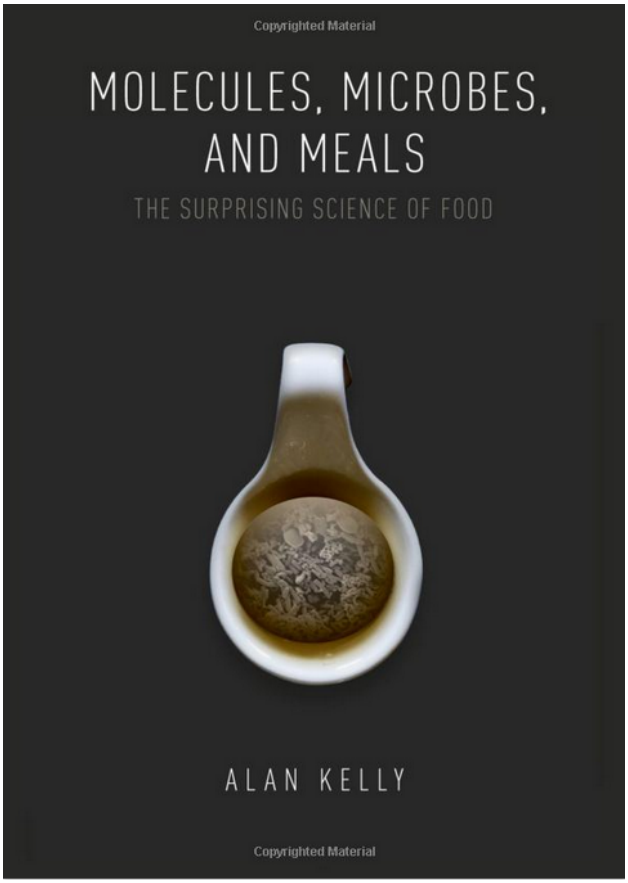
Correspondence : vilgis@mpip-mainz.mpg.de
+49 6131 379143

The book *Molecules, Microbes, and Meals*, by Alan Kelly provides a broad overview on current thinking in the science of foods. The alliteration in its title points to the culinary expression « mmm! ». Indeed, the book title already promises the author's cross-disciplinary and multi-scale intention of the contents: molecules for basic science on nanoscales, microbes for the living and active matter at mesoscales and basis for biotechnologies, meals for macroscopic scales including sensory aspects and pleasure.

For non-scientists, the book is easy to read, too, despite the level of depth. The author uses simple language and feeds his explanations with verbal pictures, which induce many associations in the readers' heads. That might be the reason, why the book comes without scientific artwork and complicated graphical support. The book has 18 didactically ordered chapters starting after the introduction from the origin of spices and foods, followed by the role of proteins in large scale textural properties and in their changes during processing , sweetness and saccharides are defined before discussing oils and emulsions. We learn that the basic differences in microorganisms can be divided into the good, the bad, and the ugly. One of the good are certainly yeasts, which get their own chapter, as well as the essential component of most foods, water. The unusual behaviour associated with water physics, makes it special and relevant for understanding many food properties, from texture, interface properties, flavour release, processing, and many more.

Many high quality figures and appetizing photos are collected in the centre of the book. The photo session in the book takes the readers also down to the micro world of foods. Exciting electron microscopy pictures of a journey through a banana offers deeper insight into the cell

Book Review



structures of the shell and the flesh, or its starch grains. Similar examples from un-boiled and boiled eggs or raw and cooked chicken breast nicely show culinary transformations during heat treatments. Every lover of soft cheese will enjoy the colourful microscopy pictures with differentlially stained fat and protein components to realize a visualization of the creamy and pasty mouthfeel of such preparations. Of course, your find pictures of “the good” close to some “wanted dead bulletins” of the ugly microorganism.

After this break, the book continues with processing chapters, such as changing temperatures, mechanical stresses, filtering, and even the important issue of safe packaging. Future techniques, such as three-dimensional printing of food get attention and possibilities and impossibilities are nicely discussed. At points like these, the previously achieved extension and depth in the discussion becomes apparent, because a correct assessment of new technologies requires profound knowledge and a solid physical-chemical basis.

Chapter 16 comes to the experience of eating and leads consequently to the kitchen lab. This chapter shows again the importance of science sub-disciplines like “molecular gastronomy”. Inthe end foods composed by nature, re-designed by cooking and processing, interact with all sensors in the oral cavity. It is only when everything from production to processing in laboratories and kitchens goes well, that flavours are released perfectly. This allows us toexpress our appreciation of our pleasurable culinary sensory experience. This chapter describes the essential link between cooking and perception, offers an understanding of taste, flavour, friction and texture, as well as the molecular interplay between these perceptions. The book puts the sensory perception on scientific grounds, apart from questions like consumer demands and acceptance.

Indeed, the book spans a wide range of relevant kitchen and laboratory topics. It takes the reader on a long journey deep inside foods, their composition, and their function, their length and time scales. All this is not just dry matter, which is sometimes associated with textbooks for students, but spiced with deviations into other disciplines, garnished with humour.,It becomes accessible to the broad community of “foodies”, chefs, readers, without losing the food science community as potential readership. An intensive study of Alan Kelly’s brilliant book is strongly recommended.

The author, Alan Kelly, is a well-known professor of food science at the University College Cork in the south of Ireland. He is a profound connoisseur of the science of dairy science,

especially bovine milk and its products, as well as delivery systems. He has published in excess of 200 peer reviewed papers, as well as several thorough reviews, and is co-editor of the "Handbook of Molecular Gastronomy" (2021).

Edited by
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Thomas Vilgis is a group leader at the MPI for Polymer Research in Mainz, where he runs a research group for soft matter food physics. He also teaches at the Universities Mainz and Gießen.