



No Small Matter

How do you visualize the invisible? Any book that intends to make the fascination of the nanoworld tangible to a general audience faces this challenge. In dealing with this seemingly impossible task, Frankel and Whitesides take the most radical approach. They don't explain, they don't even take the readers on a well-organized tour through ever-tinier structures to help them understand what is taking place on the nanoscale. Rather, they offer a more intuitive, almost poetic approach to nanoscience.

The book consists of 60 apparently randomly collected topics, with titles such as "Santa Maria", "Feeling is Seeing", "Quantum Cascades", "Water", "Single Molecules", "Cracks", "Nanotubes", "Vibrating Viola String", or "Prism and Diffraction" to name just the first few. Each is accompanied by a text by George Whitesides and an image taken (or adapted) by Felice Frankel. The pictures are of stunning beauty, even for someone who has already seen many attractive nano images. In fact, more than half of them are actually not "nano". We see fountains and wine glasses, pipes and valves, jigsaw pieces, and lichen. These images—just as the ones which actually display microscopic or nanoscopic objects—are inviting a closer look and for the reader to delve into the accompanying text. Just as the juxtaposition of the chapters does not follow a rigorous order or a clear syllabus, the text freely skips along the topics and is led by association and analogies: "*The e-book may be the salvation of writing, or the death of it, or it may be an evolutionary eddy—like the platypus—in*

the co-evolution of humans and their stories. [...] It doesn't smell like a book, and turning a page is a different experience, but for people who have never been hooked on the smell of books, or the whisper of a turning page, perhaps neither counts as a great loss."

Even though *No Small Matter* does provide some explanations and information on the science behind the selected nano topics, anyone who picks up this book to *learn* about nanoscience may be disappointed. However, it is a wonderful book for someone who wants to be taken on a mystery tour that brings nano out of the vacuum chambers and the high-resolution electron microscopes and turns it into something you can feel, taste, and see. It may be a matter of opinion whether chapter titles such as "Alice in Wonderland", "Why care?", "A Cheetah in the Underbrush?", or "Whale or Herring?" are appropriate for a book on nanoscience. Or how much one learns about catalysts from reading: "*A 'catalyst' is something that causes a transformation but is not changed in the process. A chef transforms ordinary ingredients into a sensory delight; but after the cooking is done and the meal is exclaimed over, she is still a chef, and ready to cook again.*" In any case, *No Small Matter* is a conversation piece in the best sense and with its highly esthetic images (I recommend reading the "Notes from the Photographer" in the back), it is worth a look, even for the not-so-poetic natural scientist.

Axel Lörke

Fakultät für Physik und CeNIDE
Universität Duisburg-Essen (Germany)

DOI: 10.1002/anie.201000651



No Small Matter
Science on the Nanoscale.
By Felice C. Frankel and
George M. Whitesides. Har-
vard University Press 2009.
192 pp., hardcover
€ 27.95.—ISBN 978-
0674035669