

The Secret World of Water

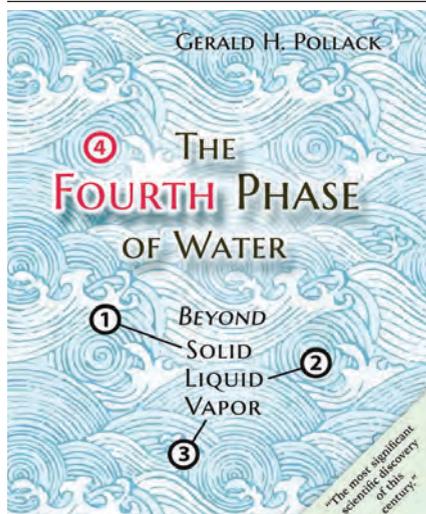
by Liona Fan-Chiang

The Fourth Phase of Water

Gerald H. Pollack

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Water is not something that most people spend much time thinking about, and due to the nature of science today—to specialize, molecularize, and concentrate on minute details—most people assume that there is not much that a layman can wonder about water that hasn't already been explained. In his new book, *The Fourth Phase of Water*, Dr. Pollack challenges this notion, pointing out both that since water is all around us, we tend not to see it as phenomenal, and that since the focus throughout the twentieth century has shifted from looking for fundamental laws, to detailing consequences of assumedly known laws, basics can go long unchallenged. "If currently accepted orthodox principles of science cannot readily explain everyday observations, then I am prepared to declare that the emperor has no clothes," Pollack declares in his Preface.

The Fourth Phase of Water is the latest in a series of books on the subject, including *Cells, Gels and the Engines*

of Life (2001), *Water and the Cell* (2006), and *Phase Transitions in Cell Biology* (2008), in which Pollack and his collaborators reveal the results of their many years of research on the unique, and previously unexplained, properties of water. This book's composition is paradox driven, meaning that there are no attempts to explain something unless the reader is first presented with something unexplained. In that sense, although the book may look and feel like a textbook, it is not composed as one, keeping the reader's mind hypothesizing and engaged. For example, chapter 1, titled "Surrounded by Mysteries," begins by listing fifteen everyday observations, such as gelatin desserts composed of 95% water but not leaking and warmer water freezing faster than cold water, and asks you to try to explain them. He follows this with an overview of the history which has led to current understanding of the subject, so that by chapter 3, the reader is ready to begin where the author did.

Water is ubiquitous, and yet a new field of study. For that reason, this book is recommended for everyone. The layman will appreciate that Pollack stops to explain technical phrases, while not slowing or dumbing it down. You will find that everyday activities can be experiments, and that you too can contribute valuable hypotheses. Scientists in other fields may find that the experiments and results presented give a new approach to their current studies.

How many fields can benefit from both the non-reductionist approach taken by Pollack and his team, and from the results relating to water and to life? Pollack points out, for example, that one of the biggest factors left out of every theory of water is energy, mostly radiant energy. Experiments performed in Pollack's lab and others

showed that a layer of water along hydrophilic surfaces exhibits dramatically different characteristics compared to "bulk" water. They showed that this layer likely has a structure that is closer to ice than that commonly associated with liquid water, and that this layer, named the "exclusion zone" by Pollack, grows in extent with incident light. In addition, far from being neutral, a characteristic commonly attributed to water, the exclusion zone is negatively charged, and its build-up creates a complimentary positively charged area just beyond it, thereby storing that incident energy in both new bonds and in electric potential.

If light can provide the energy required to build up this crystalline liquid, then what about most of the waters of the Earth, which are subjected daily to incident solar radiation? In chapter 7, Pollack points to a few cases, including that of experiments performed by Giorgio Piccardi who found that chemical reaction rates varied with periodicities of solar activity. Several processes on earth have now been shown to have possible coincidence with longer term cosmic cycles, such as the onset of the "seasonal" flu, variation in frequency of earthquakes and volcanic events (60 million yrs), sea surface temperature (140 million years), biodiversity cycles (60 and 140 million years), etc.¹ What role might water possibly play in mediating these interactions?

Much more work needs to be done. After reading this book, you will look forward to further publications which, as Pollack mentions in the forward, will include the subjects he couldn't fit in this volume.

1. See Planetary Defense: An Extraterrestrial Imperative, at larouchepac.com/planetarydefense