

Book Review

Bringing Chemistry to Life: From Matter To Man

by R.J.P. Williams and J.J.R. Frausto da Silva (Oxford University Press, 2000), 576 pp.; ISBN 0198505469; \$135.00 (hardcover)

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In two previous books (“The Biological Chemistry of the Elements : The Inorganic Chemistry of Life”, and “The Natural Selection of the Chemical Elements : The Environment and Life’s Chemistry”), Williams and Silva have done much to explain why particular elements were selected for use in biological systems and how their functions have evolved. *Bringing Chemistry to Life* provides a more fundamental chemical and physical background for the two earlier works and some chemical logic for pre-biotic chemistry and biochemical evolution.

The first three chapters present the first principles of chemistry and physics much like a basic science text, but with a cosmological perspective. The next deals with bonding concepts, including those in the solid state. The next two chapters focus on thermodynamics. Chapter seven introduces systems with boundaries, including crystals, phase interfaces, biopolymers, and cells, while the next chapter surveys commonalities in kinetic changes in a variety of atomic, chemical, biochemical and physical systems. The evolution of earth and geochemistry are then integrated with the basic principles of the organization of life on this planet and then continued through the evolution of prokaryotic and eukaryotic bacteria. The biochemical features particularly important to multi-cellular organisms and mammalian evolution are then woven in. Modern applications of organic chemistry, medicine, genetic engineering and the feedback of human industry onto human biology round out the book.

Overall, *Bringing Chemistry to Life* makes many excellent points, but the reader may have to adapt to the authors’ style, which is more conversational than economical. While the aim of the book is to provide graduate students and teachers with connections between the physical and chemical sciences, about the first half of the book would be suitable for courses in general chemistry or survey courses providing a basic chemical background for liberal arts curricula. The second half provides more of a biological and

evolutionary perspective. Both succeed admirably in making connections between chemistry and more biological, cosmological and even philosophical concepts.