



Ionic Equilibrium: Solubility and pH Calculations

James N. Butler

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A celebrated classic in the field updated and expanded to include the latest computerized calculation techniques

In 1964, James N. Butler published a book in which he presented some simple graphical methods of performing acid-base, solubility, and complex formation equilibrium calculations. Today, both the book and these methods have become standard for generations of students and professionals in fields ranging from environmental science to analytical chemistry. Named a "Citation Classic" by the Science Citation Index in 1990, the book, *Ionic Equilibrium*, continues to be one of the most widely used texts on the subject. So why tamper with near-perfection by attempting a revision of that classic? The reason is simple-- the recent rapid development and wide availability of personal computers.

In the revised *Ionic Equilibrium*, Dr. Butler updates his 1964 work by abandoning the slide rule and graph paper for the PC spreadsheet. He also expands the original coverage with extensive material on basic principles and recent research.

The first part of *Ionic Equilibrium* is devoted to the fundamentals of acid-base, solubility, and complex formation equilibria. In the second part, the author discusses oxidation-reduction equilibria, develops the principles of carbon dioxide equilibria, presents case studies demonstrating the ways in which carbon dioxide equilibria are used in physiology and oceanography, and explores the possibility of a pH scale for brines. The concluding chapter, written by David R. Cogley, gives examples of general computer programs that are capable of performing equilibrium calculations on systems of many components.

Replete with real-world examples, details of important calculations, and practical problems, *Ionic Equilibrium* is an ideal course text for students of environmental chemistry, engineering, or health; analytical chemistry; oceanography; geochemistry; biochemistry; physical chemistry; and clinical chemistry. It is also a valuable working resource for professionals in those fields as well as industrial chemists involved with solution chemistry.

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