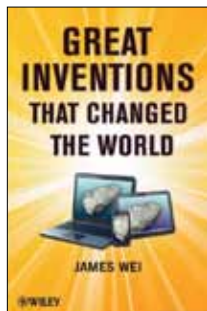


# Books

## GREAT INVENTIONS THAT CHANGED THE WORLD



**James Wei, John Wiley & Sons, Inc., Hoboken, NJ, \$50, 360 pages, July 2012, ISBN: 978-0-470768-17-4**

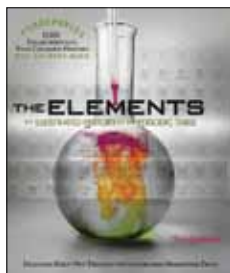
The character of innovation is changing. In this era of “Big Science,” innovation is increasingly becoming the work of teams, with many of today’s inventions found at the intersection of disciplines.

This book provides a review of important inventions throughout history — from the stone axe to the Internet — and introduces the reader to the scientists, engineers, and entrepreneurs who changed the world with their innovations. The author — a chemical engineering professor, inventor, and former AIChE president — sets the stage with an introductory chapter examining the role of inventors and inventions in fueling innovation and global advancement. In subsequent chapters, he explains how human needs related to food, clothing, housing, work, health, and security spurred invention.

The stories are punctuated with risk-taking, failure, determination, insightfulness, and even luck. For example, the author tells the story of Alexander Fleming’s discovery of penicillin when he noticed that the bacteria he had been studying were not growing near the mold that had accumulated on a contaminated Petri dish, and the story of the researcher at Raytheon’s radar lab who conceived the microwave oven when he noticed that a candy bar he was carrying in his pocket was melting.

Readers will learn not only about inventions and inventors, but also the impact they have had on society and the environment. While inventions solve problems, the author demonstrates that they can also lead to new problems, from pollution to bioterrorism. By enabling people to understand the impact of inventions throughout history, this book can help guide the next generation of citizens, policymakers, and inventors.

## THE ELEMENTS: AN ILLUSTRATED HISTORY OF THE PERIODIC TABLE



**Tom Jackson, Sheltor Harbor Press, New York, NY, \$25, 168 pages, Oct. 2012, ISBN: 978-0-985323-03-5**

This impressively illustrated coffee table book — the latest volume in the publisher’s Ponderables series of books — traces the history of the periodic table of elements, and tells the stories of the puzzles that had to

be solved (and the people who solved them) on the way to

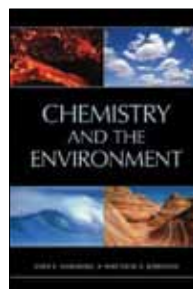
making the scientific breakthroughs that moved the world forward.

Organized chronologically, the book introduces readers to contributions made by philosophers, alchemists, industrialists, and great scientists. Among the stories are those of Democritus of ancient Greece, who said that the four elements of nature — earth, water, fire, and air — must be made of atoms, otherwise the world is just an illusion, as well as the French aristocrat Antoine Lavoisier, who was the first to show that water is not an element at all.

From the philosopher who noticed the unusual force exerted by amber, to the British inventor who described the powerful effect of electricity on a dead body to Mary Shelley (before she wrote *Frankenstein*), to the theologian who observed mice becoming unconscious when dangled over brewing beer, the discovery of the elements is laid out chapter by chapter, with each adding to our understanding of the basic substances that make up the world around us.

Featuring more than 300 illustrations, the book includes a 12-page removable foldout timeline of the periodic table, which places the stories of chemical discoveries in historical context. The foldout also contains a chart of elements in atomic order, providing scientific data and practical information for all 118 elements.

## CHEMISTRY AND THE ENVIRONMENT



**Sven E. Harnung and Matthew S. Johnson, Cambridge Univ. Press, Cambridge, U.K., \$75, 440 pages, Aug. 2012, ISBN: 978-1-107682-57-3**

Beginning with the origins of the Earth, this text employs principles of physical, inorganic, and organic chemistry to provide a scientific description of the Earth’s natural environment, and the environmental impact of human activity.

After exploring the chemistry of Earth’s atmosphere, hydrosphere, lithosphere (including soils), and biogeochemical cycles, the book discusses a variety of industrial processes, from paper and steel to energy and pesticide production — focusing on the environmental impact of these processes, and how increasing environmental awareness has led to improved processes. The book wraps up with a consideration of the Earth’s modern climate.

The authors provide the necessary mathematics and physics applicable to the discussions, using modern notation and terminology. The authors also employ the professionally accepted nomenclature (IUPAC and SI), allowing transparent access to the material by students of environmental chemistry, as well as professionals in chemistry and allied fields.