

## ***How to Review or Purchase the Modern Alchemy eBooks***

Imagine that you have the opportunity to tour a strange and magical landscape, personally guided by one of the region's most illustrious guides.

[\*The Mysteries of Modern Alchemy\*](#) and its sequel [\*The Magic of Modern Alchemy\*](#) offer exactly that!

These two books comprise a two-part introduction to a world consisting of fantastic materials that have been transformed by unimaginably high pressures into seemingly other substances that you have never encountered.

Following his graduation with a B.S. in Engineering, Charles Christoe (Sigma Rho Class of 1961) remained at the University of Illinois to complete a Ph.D. in Experimental Solid-State Physics. There, he became friends with a post-graduate intern from Germany named Wilfried Holzapfel. Their friendship resulted, many years later, in the co-authorship of the two e-books described below.

The first book (*Mysteries*) presents the motivation and the laboratory techniques for obtaining detailed information about the way that atoms interact with each other as externally-applied pressure forces them closer and closer together. The bulk materials undergo changes in their physical appearance, their strength and their ability to conduct electricity – hence the reference to alchemy. Under high pressure, samples of one material can take on properties that other, very different, materials display under normal conditions. The book presents this mysterious phenomenon as a dialog between two first-year students at a typical university. The students have been drawn into their conversation by an unusual sculpture that a professor of physics is actively creating in his front yard. By the end of their extended dialogue, the students understand the basic ideas that underlie the sculpture and are able to explain them to their friends. The entire conversation between the students and the professor takes place at a conceptual level that avoids the use of higher mathematics and complicated formulas.

The second book (*Magic*) goes into considerably more detail about what actually happens at an atomic level in the formation of solid materials. It explains, at least conceptually, the way that the chemical bonds between the atoms have to change to accommodate increasing pressure. That, in turn, forces a change in the geometry of the crystalline structure that determines the physical properties of the bulk material. The story restricts itself to elemental solids, leaving the effects of pressure on alloys and molecular solids for other authors to describe. Again, the students and their mentors engage in lively dialog about the things that they “observe” on their “journeys” through the *Periodic Table of the Elements*. Although they are quite thorough in their exploration of the entire range of known elements, they avoid the use of complex mathematics or actual formulas to illustrate their discoveries. Despite that, by the end of the expedition, Helen and Marie have come to understand why *alchemy* is a fair description of the professor's research.

Although either book is available from Amazon in Kindle format at modest cost (\$1.99, plus tax (no shipping!)) it is not necessary to use a Kindle to read it. There are instructions on the Kindle site for downloading an app that will match the format of the book to that of the reader's choice. It is also possible to preview the first dozen or so pages of either story at no cost, directly from the website.

A third book related to Modern Alchemy is also available from Amazon either as an e-book or a “print on demand” book. [\*Modern Alchemy and the Philosopher's Stone\*](#) is an earlier edition of the story that combines the content of the two books described above.