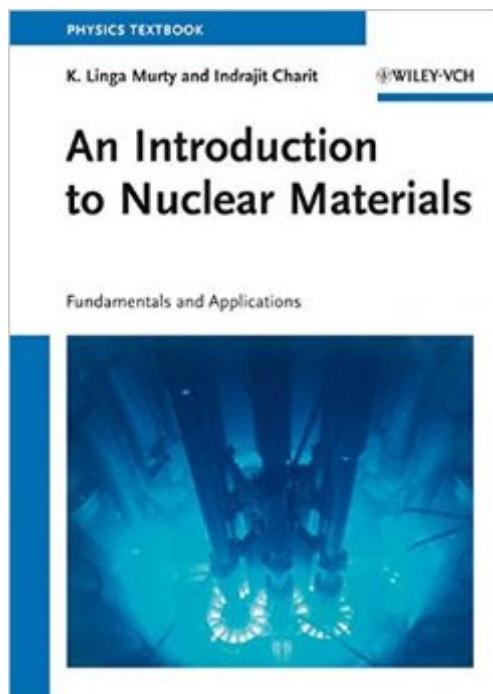


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# An Introduction To Nuclear Materials: Fundamentals And Applications



## Synopsis

Covering both fundamental and advanced aspects in an accessible way, this textbook begins with an overview of nuclear reactor systems, helping readers to familiarize themselves with the varied designs. Then the readers are introduced to different possibilities for materials applications in the various sections of nuclear energy systems. Materials selection and life prediction methodologies for nuclear reactors are also presented in relation to creep, corrosion and other degradation mechanisms. An appendix compiles useful property data relevant for nuclear reactor applications. Throughout the book, there is a thorough coverage of various materials science principles, such as physical and mechanical metallurgy, defects and diffusion and radiation effects on materials, with serious efforts made to establish structure-property correlations wherever possible. With its emphasis on the latest developments and outstanding problems in the field, this is both a valuable introduction and a ready reference for beginners and experienced practitioners alike.

## Book Information

Paperback: 398 pages

Publisher: Wiley-VCH; 1 edition (January 29, 2013)

Language: English

ISBN-10: 3527407677

ISBN-13: 978-3527407675

Product Dimensions: 6.8 x 0.8 x 9.5 inches

Shipping Weight: 1.9 pounds (View shipping rates and policies)

Average Customer Review: 3.7 out of 5 starsÂ See all reviewsÂ (3 customer reviews)

Best Sellers Rank: #459,263 in Books (See Top 100 in Books) #61 inÂ Books > Engineering & Transportation > Engineering > Energy Production & Extraction > Nuclear #2189 inÂ Books > Science & Math > Nature & Ecology > Conservation #5302 inÂ Books > Science & Math > Physics

## Customer Reviews

Unfortunately the professor who wrote this textbook is actually my professor in my Nuclear Materials course. Therefore the lecture is essentially a re-hashing of this horribly written textbook. Often the chapter questions will refer to concepts which were not discussed within the chapter, and the absolutely inconsistent use of subscripts and general variable meanings changes throughout the book. The Kindle version of this book is quite poor as it is indexed by "locations" rather than "page numbers" for some reason that no human will ever understand. Also formulas are EXTREMELY small and unable to be zoomed in upon for, again, some reason that no human will ever

understand. Dr. Murty is a brilliant man, but wow, someone really should have co-authored this abysmal textbook with him to ensure it wasn't such a frustrating experience.

I am roughly 50% through this book, but felt compelled to leave a tentative review to make sure that it be known that this is shaping up to be an excellent textbook. It may not be for everyone, but for me, it is exactly what I needed. I came from a non-materials and non-nuclear background, and now find myself in graduate school for nuclear engineering missing quite a few basic concepts and links in both areas. I have taken both undergraduate and graduate level coursework in nuclear materials, and read at least 200 journal papers in the field, however my knowledge base was quickly becoming a muddled mess due to the utter lack of structure tying it all together. Enter Dr. Murty's book.. when I saw that it had come out, I thought: "FINALLY! Someone had the balls to write it all down at this level!". The truth is that basic-level materials texts are a dime a dozen, but \*nuclear\* materials texts of that sort are virtually nonexistent, and I am extremely grateful that Dr. Murty has put in the effort to write one. The beauty of this textbook is that it rehashes many basic materials concepts, but A) focuses only on those which are relevant to the materials problems encountered in the nuclear industry, and B) presents them in a way which focuses very clearly and logically on the aspects that will later arise in discussions of nuclear materials issues. I am confident that after working through Dr. Murty's book, anyone should be capable of tackling papers in the field of nuclear materials with a good skeleton of concepts and terminology. And I wouldn't be surprised if it turned out to be the saving grace of many a nuclear graduate student in their oral qualifying exams or thesis defense. Thanks Dr. Murty!!

Not bad, but mostly a review of elementary materials science concepts with some nuclear concepts thrown in at the end. Suitable for non-materials majors who have never heard of a crystal structure or a dislocation line; not suitable for materials scientists or others with strong materials backgrounds. The actual nuclear concepts are very cursory and almost an afterthought. Glad I used interlibrary loan. To be fair, the other books (Olander, Was) have their faults, too. There is no good general book on this topic. Perhaps combining this book with the other two would make a good combination.

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