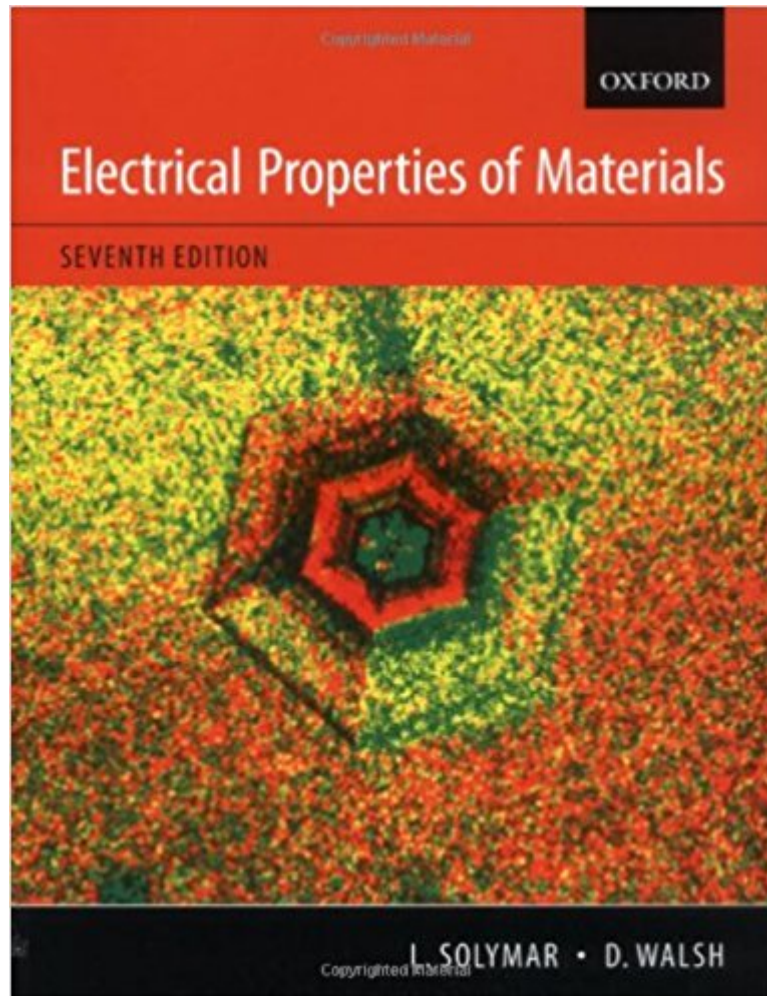




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Electrical Properties Of Materials



Synopsis

The seventh edition of this classic text illustrates the fundamentals of the electrical properties of materials in the context of contemporary engineering applications. Written in an informal, accessible style, it emphasizes the core ideas relevant to understanding the subject and deliberately keeps the mathematical treatment simple. The book presents the simplest model that can display the essential properties of a phenomenon and examines it, showing the difference between ideal and actual behavior. Topics are selected so that the operation of devices having applications (or possible future applications) in engineering can be explained. Problems and worked examples are included throughout.

Features of the Seventh Edition

- Presents a comprehensive treatment of light emitting diodes, which are rapidly replacing classical lighting sources
- Covers new topics such as organic material (including various polymers) and artificial materials (including photonic gap materials and metamaterials)
- Provides insight into cutting-edge fields such as amorphous semiconductors and nanotechnology
- Discusses new devices including nanotube transistors, single electron transistors, magnetic tunnel junctions, quantum cascade lasers, and ferroelectric and superconducting memories

A solutions manual and illustrations from the text are available for download at: <http://www.oup.com/uk/booksites/content/0199267936/>

Book Information

Paperback: 416 pages

Publisher: Oxford University Press; 7 edition (January 22, 2004)

Language: English

ISBN-10: 0195672259

ISBN-13: 978-0199267934

ASIN: 0199267936

Product Dimensions: 9.7 x 0.9 x 7.4 inches

Shipping Weight: 1.7 pounds

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Customer Reviews

Along the way, Dr. Solymar proves time and time again that he has not mastered many of the chemistry and physics topics that he attempts to explain. The uncertainty relation is proved via an

arbitrarily chosen width for a wave packet without mention of the correct way to derive this relationship (found in any number of quantum mechanics books), and the final uncertainty relationship is stated incorrectly. Bragg's relationship is stated wrong. I guess he does not care to differentiate between greater than or equal to and greater than; nor between h and $\hbar$ (nor between the inclusion or exclusion of a factor of 2). However, for an introductory text, I would see it appropriate to get the equations and proof-approaches as correct as possible. If ugly algebra is what he is trying to avoid in this introductory text, he should at least provide the correct setups for each derivation, provide the relevant results, and guide the reader to alternative texts for a full-on mathematical work-up. Instead, what Dr. Solymar resorts to are cute, but useless stories, and arbitrary or unconventional approaches to 'prove' equations (usually not proofs at all, but a sequence of equalities showing that one result is consistent with another). You wouldn't use arithmetic rules and algebraic laws learned in secondary school to prove the more basic set theory (which can be derived from a basic set of axioms); nor would you use Pauli's exclusions principle to prove the form of a multi-particle wave equation for identical/indistinguishable particles. Yet Dr. Solymar does exactly this: 'prove' things in the wrong direction, or start at a certain arbitrary result (without making explicit the assumptions), using this random starting point to 'prove' a very critical result.

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