Review Of "Fuel Cell Fundamentals" By R. O'hayre Et Al.

As the search for alternative fuels heats up, no topic is hotter than fuel cells. Filling a glaring gap in the literature, Fuel Cell Fundamentals, Second Edition gives advanced undergraduate and beginning level graduate students an important introduction to the basic science and engineering behind fuel cell technology. Emphasizing the foundational scientific principles that apply to any fuel cell type or technology, the text provides straightforward descriptions of how fuel cells work, why they offer the potential for high efficiency, and how their unique advantages can best be used. Designed to be accessible to fuel cell beginners, the text is suitable for any engineering or science major with a background in calculus, basic physics, and elementary thermodynamics. This new edition provides updated and enhanced examples, problems, and pedagogy for classroom use and features a significantly enlarged section on the practical applications of fuel cell technology. A solutions manual will be developed.

This book is the best one that I could find to introduce the reader to the technology and underlying science of fuel cells. The quality of the presentation is high but yet it is easy to read. The emphasis on the fundamentals is appreciated. The book has discussions of the relevant thermodynamics, transport science, and chemical kinetics in the early chapters with a supporting appendix on quantum-mechanical issues. Then, it addresses modeling and characterization of fuel cells and fuel-cell systems. Environmental impact is also addressed in the last chapter. The book relies on both mathematics and physical arguments to present the concepts and information. A student at the senior level or graduate level in a program of engineering, physics, or chemistry should have no difficulty with this book. Problem exercises are suggested in the book. Consequently, it can be used as either a textbook or reference book.

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