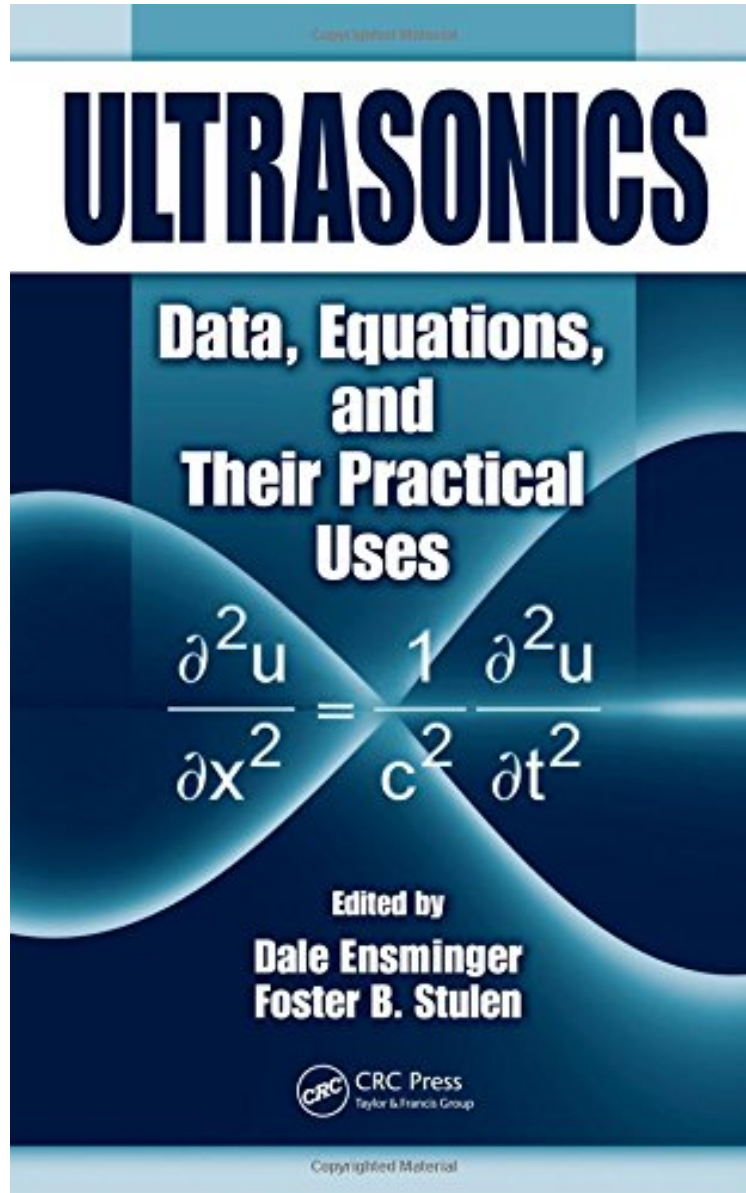


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## Ultrasonics: Data, Equations and Their Practical Uses

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Gain a Unique and Comprehensive Understanding of Ultrasonics Despite its importance, most books on ultrasonics cover only very specific sub-fields of the science. They generally also take a more mathematical approach and lack the wider scope needed to truly improve understanding and facilitate practical use of ultrasonics across a wide range of disciplines. Create Efficient Systems for Any Environment Ultrasonics Data covers the science, technology, and application of ultrasonics. It discusses everything from sensors to systems, dealing primarily with both low- and high-intensity industrial and medical ultrasonic applications. It presents data and functions from different areas of science and technology to help readers better comprehend and more effectively use ultrasound energy. Starting with relevant basic ultrasonic equations, the authors explore the application of finite elements to the design of vibrating bars, horns, plates, rings, large horns, and blades. They analyze properties and design data applicable to piezoelectric materials and transducers, as well as magnetostrictive, pneumatic, and liquid transducers. The book examines the mechanical and physical properties of materials, including those necessary for welding and forming. Using practical applications, the book explores the chemical properties and compatibilities of materials, and the chemical effects of ultrasound. There is also information on nondestructive testing applications and the modern equipment used to carry them out, including electromagnetic acoustic transducers (EMATs) and lasers. A "Big-Picture" Focus on Practical Data and Principles Versatile as a reference for engineers, researchers, and graduate students, this book summarizes the history of ultrasonics, projects future advances, and evaluates the practicality of new ideas. Helping system designers meet the requirements of present and future developments, it covers a range of applications to inspire new innovations using ultrasonics.

About the Author Sunnyvale, California, USA Ethicon Endo-Surgery