



# Laser Ultrasonics Techniques and Applications

By C.B Scruby, L.E Drain

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The first book devoted to laser techniques in the generation and reception of ultrasonic waves in materials, Laser Ultrasonics: Techniques and Applications provides a full description of the state of the art in all fields involving both lasers and ultrasonics. This practical book focuses mainly on the possible applications of the techniques, yet theory is discussed wherever necessary.

After an introduction to ultrasonics and laser technology, the book reviews acousto-optics, various acousto-optic devices, and noninterferometric optical methods of measuring ultrasonic displacements. The authors then describe opto-acoustic techniques, discussing laser interferometry, including reference-beam, velocity, and Fabry-Perot systems, and their application to ultrasonic measurement on different surfaces. The authors also detail the generation of ultrasound as a consequence of the absorption of laser light in material. The book proceeds to discuss applications of laser-generated ultrasound, both by itself and in combination with laser interferometric reception to form an entirely remote and non-contact measurement and testing system. Comparisons with nonoptical techniques for ultrasonic generation and detection are made where appropriate. The book concludes with a discussion of the future developments and uses of laser techniques in ultrasonics, with particular reference to nondestructive testing.

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