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Nota di contenuto	Contents; List of symbols; 1 Son et lumiere; 1.1 Composites; 1.2 Rocks; 1.3 Biological matrix; 1.4 What else?; 2 Focusing and scanning; 2.1 Focused acoustic beams; 2.2 Scanning in transmission; 2.3 Reflection acoustic microscopy; 3 Resolution; 3.1 Diffraction and noise; 3.2 The coupling fluid; 3.3 Cryogenic microscopy; 3.4 Non-linear enhancement of resolution; 3.5 Aliasing; 3.6 Does defocusing degrade the resolution?; 4 Lens design and selection; 4.1 Interior imaging; 4.2 Surface imaging; 4.3 Wanted and unwanted signals; 5 Electronic circuits for quantitative microscopy 5.1 Time and frequency domains5.2 Quasi-monochromatic systems; 5.3 Very short pulse techniques; 6 A little elementary acoustics; 6.1 Scalar theory; 6.2 Tensor derivation of acoustic waves in solids; 6.3 Rayleigh waves; 6.4 Reflection; 6.5 Materials constants; 7 Contrast theory; 7.1 Wave theory of V(z); 7.2 Ray model of V(z); 7.3 Tweedledum or Tweedledee?; 8 Experimental elastic microanalysis; 8.1 Measurement of the reflectance function; 8.2 Ray methods; 8.3 Time-resolved techniques; 8.4 Phew!; 9 Biological tissue; 9.1 A soft option; 9.2 Cell cultures; 9.3 Histological sections

Sommario/riassunto

Acoustic microscopy enables the elastic properties of materials to be imaged and measured with the resolution of a good microscope. By using frequencies in the microwave regime, it is possible to make the acoustic wavelength comparable with the wavelength of light, and hence to achieve a resolution comparable with an optical microscope. Solids can support both longitudinal and transverse acoustic waves. At surfaces a unique combination of the two known as Raleigh waves canpropagate, and in many circumstances these dominate the contrast in acoustic microscopy. Following the invention of scannin