



Fifth lecture

*Characterization Of Materials — II:
Electrical, Optical, X-Ray
Absorption, Acoustic, Ultrasonic*

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What is characterization of a material?

Material characterization is the process of measuring and determining physical, chemical, mechanical and microstructural properties of materials.

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In addition to the mechanical, thermal, and surface properties of materials, other physical properties could be important in particular applications of biomaterials. Properties considered in this chapter include electrical, optical, absorption of x-rays, acoustic, ultrasonic, density, porosity, and diffusion.

What is electronic characterization?

Electrical characterization can be used to determine resistivity, carrier concentration, mobility, contact resistance, barrier height, depletion width, oxide charge, interface states, carrier lifetimes, and deep level impurities.

What is the importance of electrical characterization?

Electrical characterization of the TSV impedance is necessary to properly model the delay and power consumption of intertie signals. The key contributions of this chapter are summarized as follows: Closed-form expressions of the resistance, capacitance, inductance, and conductance for intertie 3-D visa are presented.

What is optical characterization techniques?

The optical properties of a material can tell us important information about its physical properties, such as thickness. However, they can also reveal valuable information about the electronic properties of a material through the use of spectroscopy. Ellipsometry. Optical spectroscopy.