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Title:High-Q reflection notch method for mm wave measurements of large dielectric losses using a stack resonator: Analysis and simulations

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Abstract:A high-Q reflection notch method for measuring large dielectric losses in absorbing materials when using a stack resonator, which is a one-dimensional analogue of a capillary-in-a-waveguide technique, has been proposed. A detailed explanation of the effects that lay the basis of the method has been presented. The method is particularly accurate and sensitive for highly absorbing materials when other techniques are inadequate. The method can be used for dielectric spectroscopy of a broad range of liquid and solid materials, with applications in chemical, pharmaceutical and food industry, biomedical sciences, agriculture etc., in those frequency bands of infrared, millimeter wave and, especially, THz waves where dielectric losses are significant.

Number of references:20

Main heading:Dielectric losses

Controlled terms:Dielectric devices - Frequency bands - Millimeter waves - Resonators

Uncontrolled terms:Absorbing materials - Analysis and simulation - Biomedical science - Food industries - Mm waves - Solid material - THz waves

Classification code:704 Electric Components and Equipment - 708.1 Dielectric Materials - 711 Electromagnetic Waves - 714 Electronic Components and Tubes - 716.4 Television Systems and Equipment

Database:Compendex