Abstracts

Field Analysis of New Coaxial Dielectrometer

W. Xi and W.R. Tinga. "Field Analysis of New Coaxial Dielectrometer." 1992 Transactions on Microwave Theory and Techniques 40.10 (Oct. 1992 [T-MTT]): 1927-1934.

In response to the new developments in high temperature microwave dielectrometers, a field analysis of a composite sample insertion hole in a coaxial re-entrant cavity is performed via a mode-matching formulation. In this paper, the formulation and the numerical method are presented. The numerical results are discussed with attention focused on the hole effects on the dielectric loaded cavity. By virtue of this analysis and the structure which allows for the sample insertion holes, a new dielectrometer is obtained featuring both ease of sample insertion and accuracy in dielectric determinations. This paper demonstrates that solid, liquid or powdered samples can be readily accommodated and measured, and the dielectric data obtained via two theoretically calculated calibration curves are in good agreement with published data.

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