# Abstracts

## Use of a Microwave Cavity for Sensing Dielectric Properties of Arbitrarily Shaped Biological Objects

*A.W. Kraszewski, S.O. Nelson and T.-S. You. "Use of a Microwave Cavity for Sensing Dielectric Properties of Arbitrarily Shaped Biological Objects." 1990 Transactions on Microwave Theory and Techniques 38.7 (Jul. 1990 [T-MTT]): 858-863.*

A rectangular waveguide resonator operating in the H /sub 105/ mode at 3.2 GHz was used in determining the change in resonant frequency, Delta F, and the Q factor of the cavity, Delta T, when measured with and without single corn kernels of various shapes and dimensions. By measuring those variables for a kernel oriented in two positions, differing by a 90° rotation with respect to the maximum E-field vector, the average values of Delta F and Delta T were found to be quite independent of shape. The ratio Delta F/Delta T is independent of size and is a function of the material properties (epsilon'-1 /epsilon''). This function is shown to be related to the material density, the moisture content, or other characteristics when all other properties except the one selected remain unchanged.

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