Abstracts

The Determination of the Electromagnetic Field and SAR Pattern of an Interstitial Applicator in a Dissipative Dielectric Medium

Y. Zhang, N.V. Dubal, R. Takemoto-Hambleton and W.T. Joines. "The Determination of the Electromagnetic Field and SAR Pattern of an Interstitial Applicator in a Dissipative Dielectric Medium." 1988 Transactions on Microwave Theory and Techniques 36.10 (Oct. 1988 [T-MTT]): 1438-1444.

The spatial distribution of microwave energy absorbed per unit mass (the specific absorption rate, or SAR) in biological tissue is calculated for a class of interstitial antennas. The insulated interstitial applicator is simulated as an asymmetrically driven antenna. An expression for the electric field intensity near the antenna is derived and calculated by direct numerical evaluation of a surface integral over the insulation. The predicted SAR patterns obtained using the calculated electric field intensity and the tissue conductivity agree very well with the measured SAR distributions around three different applicators in muscle-equivalent phantoms.

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