Abstracts

Energy Absorption from Small Radiating Coaxial Probes in Lossy Media

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This paper describes the calculation of energy deposition around small open-ended coaxial antenna probes in lossy media. Two theoretical methods, a small monopole approximation (I) and an equivalent magnetic current source (II), are evaluated and compared. Method I is shown to be inappropriate for determining near field energy deposition. Power contour plots determined by method II in the vicinity of the open-ended coaxial antenna are presented as well as calculations of total power absorbed as a function of distance from the antenna center for various antenna dimensions and media dielectric properties. Our calculations of absorbed power distributions near the antenna are consistent with the limited experimental data which is available for comparison. A frequency of 2.45 GHz was selected for these calculations so that the results will be of value to workers interested in the application of own-ended coaxial antennas for invasive treatment of cancer by microwave hyperthermia.

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