Abstracts

Three-Dimensional SAR Distributions Computed in a Multilayered Cylindrical Model for Electromagnetic Hyperthermia

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A model consisting of multilayered, concentric, circular cylinders is used to numerically investigate specific absorption rate (SAR) distributions for electromagnetic hyperthermia. The fields in the cylinders are expanded in eigenfunctions, and axial confinement is achieved via Fourier transformation. Only axisymmetric SAR distributions are considered. TM/sub 0/ modes have, SAR distributions appearing most useful for hyperthermia of deep-seated tumors. As the SAR is more confined axially: 1) the radial components of the TM/sub 0/ mode fields increase, and 2) the attenuation in the radial direction increases. Differences in SAR distributions are more apparent near the surface of a model than they are near the core. The effects of axial confinement on the optimal frequency of operation are discussed.

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