Abstracts

Hyperthermia and Inhomogeneous Tissue Effects Using an Annular Phased Array

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A regional hyperthermia Annular Phased Array (APA) applicator is described, and examples of its various heating patterns, obtained by scanning the electric fields with a small E-field sensor, are illustrated. Also shown are the effects of different frequencies of an elliptical phantom cylinder having a 1-cm-thick artificial fat wall and the generaf dimensions of the human trunk. These studies show the APA's ability to achieve uniform heating at lower frequencies (below 70 MHz) or to focus central heating at moderately higher frequencies (above 70 MHz). The influence of human anatomical contours in altering heating patterns is discussed using results obtained with a female mannequin having a thin latex shell filled with tissue-equivalent phantom. Field perturbations caused by internaly embedded low-dielectric structures are presented, showing the localized effects of small objects whose surfaces are perpendicular to the electric field.

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