Abstracts

Microwave Hyperthermia Induced by a Phased Interstitial Antenna Array (Short Papers)

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An interstitial microwave antenna array for hyperthermia cancer treatment is investigated. The purpose is to generate both uniform and controlled nonuniform temperature distributions in biological tissue by modulating the phases of the signals applied to each antenna. The array has four antennas positioned on the corners of a 2 cm square. The distributions of absorbed power within the arrays are computed and then converted into temperature distributions through a heat conduction simulation. The temperature patterns over phantom muscle are presented in both the lateral plane (perpendicular to the antennas) and the axial plane (parallel to the antennas). It has been found that, by proper phase modulation of RF signals applied to each antenna, a uniform heating can be produced in the entire array volume. Also, a peripheral heating pattern may be generated around the array, again by using the proper phase modulation.

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