Abstracts

An Electric Field Converging Applicator with Heating Pattern Controller for Microwave Hyperthermia

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A new type of applicator for microwave hyperthermia at 430 MHz has heen developed. The applicator, which consists of an integrated waveguide array, has a convergent effect of the radiated electromagnetic (EM) field in Iossy dielectric media, and it can change the heating pattern in the medium with ease. The electric field distributions from the aperture of the applicator were measured in a saline solution having a concentration of 0.2--0.6 percent which served as the model of simulated human tissues. The results show that when using the above applicator, the location of maximum intensity of the electric field conld be generated inside of the dissipative medium. The calculations of temperature distribution were performed in the model by using the experimental results of the electric field distribution. The applicator could change the transverse electric field distribution inside the medium, and then could control the depth of tissues located to the hyperthermic range. The heating range available for hyperthermia rising our single applicator is maximum 60 mm in depth theoretically.

❑ Return to main document.