# Abstracts

## A 432-MHz Local Hyperthermia System Using an Indirectly Cooled, Water-Loaded Waveguide Applicator

*N.K. Uzunoglu, E.A. Angelikas and P.A. Cosmidis. "A 432-MHz Local Hyperthermia System Using an Indirectly Cooled, Water-Loaded Waveguide Applicator." 1987 Transactions on Microwave Theory and Techniques 35.2 (Feb. 1987 [T-MTT]): 106-111.*

A water-loaded, indirectly cooled wavegnide antenna with a small aperture size (2 x 5.5 $cm^2$) has been developed for local hyperthermia applications. The operation frequency is 432 MHz. The indirect cooling is achieved by circulating water in an external chamber having common walls with the waveguide, and good thermal and electrical stability is achieved for radiation powers up to 100 W. The water loading provides a good coupling of the radiated power into tissue. The observed variations in standing wave ratios and the concentration of the specific absorption rates (SAR's) are found to be satisfactory for localized superficial hyperthermia treatments. The matching of the water-loaded antenna into the power generator requires special attention because of two possible matting conditions corresponding to high- and low-power dissipations inside the antenna cavity. SAR distributions inside tissues have been computed and compared with thermographic measurements performed in phantoms. Preliminary results of trials in Wistar rats transplanted with Walker sarcoma are also reported.

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