Abstracts

Effectiveness of FDTD in predicting SAR distributions from the lucite cone applicator

T. Samaras, P.J.M. Rietveld and G.C. Van Rhoon. "Effectiveness of FDTD in predicting SAR distributions from the lucite cone applicator." 2000 Transactions on Microwave Theory and Techniques 48.11 (Nov. 2000, Part II [T-MTT] (Special Issue on Medical Application and Biological Effects of RF/Microwaves)): 2059-2063.

The benefits of using superficial hyperthermia together with radiotherapy has long been proven for recurrent breast carcinomas. The lucite cone applicator has been introduced by some hospital hyperthermia units for superficial treatments. It is characterized by a large effective field size. The modeling techniques used in the past for the study of this, as well as other applicators used for superficial hyperthermia, have failed to address some treatment parameters, such as the dimensions of the waterbolus, which are significant for clinical practice. In this paper, the finite-difference time-domain (FDTD) method is used for modeling the applicators. The numerical results are compared with thermographic measurements. The agreement between predicted and measured specific-absorption-rate distributions is very good. The use of the FDTD method is expected to promote the study of treatment specific factors and help improve future treatment quality.

❑ Return to main document.