Abstracts

Experimental Validation of a Combined Electromagnetic and Thermal FDTD Model of a Microwave Heating Process

L. Ma, D.-L. Paul, N. Pothecary, C. Railton, J. Bows, L. Barratt, J. Mullin and D. Simons. "Experimental Validation of a Combined Electromagnetic and Thermal FDTD Model of a Microwave Heating Process." 1995 Transactions on Microwave Theory and Techniques 43.11 (Nov. 1995 [T-MTT]): 2565-2572.

Microwave cooking, tempering, and pasteurizing of foods involves several complex and interacting physical phenomena. Although such processes are widely used, the interactions between the food product, packaging, and the microwave oven itself are particularly complicated, are not well understood, and applicable simulation tools are lacking. In this contribution we describe a combined finite difference time domain model for the electromagnetic and the heat transfer processes which include temperature dependence of the electrical and thermal properties of the food product. This model is validated by comparison to experiment.

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