

# Electromagnetic(EM) and Thermal Characterization of a Microwave Oven in COMSOL Multiphysics® Software

S. Fujii<sup>1</sup>, E. Suzuki<sup>2</sup>

<sup>1</sup>National Institute of Technology, Okinawa College, Nago, Okinawa, Japan

<sup>2</sup>Tokyo Institute of Technology, Meguro, Tokyo, Japan

## Abstract

Chemical reactions performed under microwave irradiation often have high reaction rates and high selectivities, which enable reactor sizes to be compact and processes to be energy-conserving. A microwave oven is widely used for microwave chemical processing and chemical synthesis. The COMSOL Multiphysics® software was used to obtain the the distribution of the electromagnetic (EM) field in the multi-mode applicator and the rotating stirrer fan of the microwave oven. The temperature distribution of the sample in the microwave oven was also obtained.

## Reference

Y. A. Çengel, Int. J. Energy Res. 31, 1088 (2007)

## Figures used in the abstract

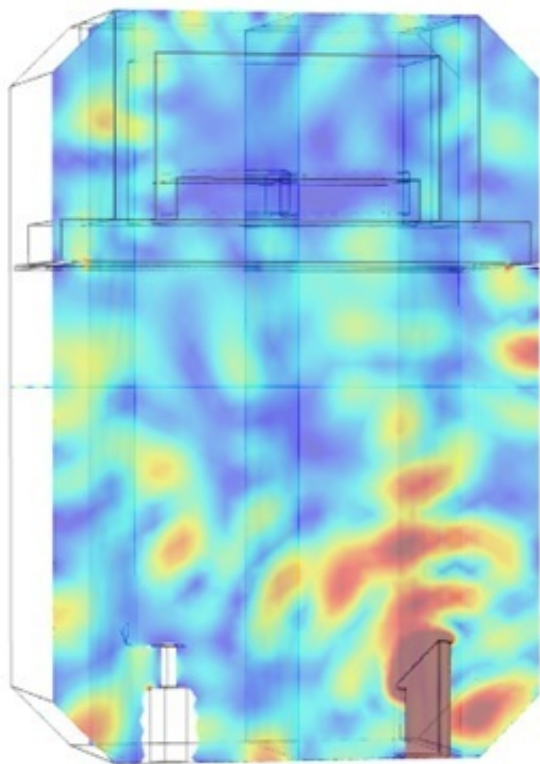


Figure 1: Electric field in the multi-mode applicator

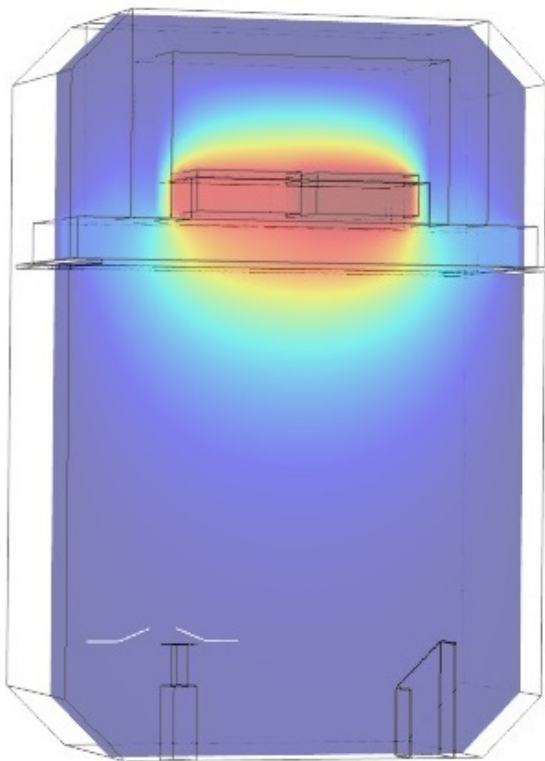


Figure 2: Temperature distribution in the material