

---

## Moderate Electric Field processing of food emulsions

**MARRA F. (1), ROMANO A. (1)**

1 Università degli studi di Salerno, Fisciano, Italy

Moderate Electric Field (MEF) processing of foods includes direct application of electric fields up to the order of  $10^3$  V/cm, in a frequency range going from Hz to kHz. MEF application results in food heating and/or electroporation of cells included in the food matter. MEF heating is characterized by high rates of electrical energy converted into thermal energy, and it has been proposed as sustainable food processing technology. Foods eligible to MEF processing have electrical conductivity ranging higher than  $1 \text{e-}1$  S/m. Of course, MEF processing could be not idoneous for food formulations containing fat (which is characterized by a very low electrical conductivity). This work presents a study on MEF processing of food emulsions, owning different formulations, for understanding the role of fat in determining the suitability of MEF heating for dressing sauces and heterogeneous food portions ready to eat. Electrical characterization of considered food formulations has been analyzed by using a custom MEF system, able to work between 40 Hz and 1200 Hz, up to 100 V/cm. Results show that, for dressing sauces, a range of fat/water/salt ratio exists for maximizing the MEF efficiency. At optimized conditions, MEF processed dressing sauces resulted also in better final color, as a prove of a lower thermal damage suffered by the tested samples.