# FOCUSED MICROWAVES IN ELECTROCHEMISTRY

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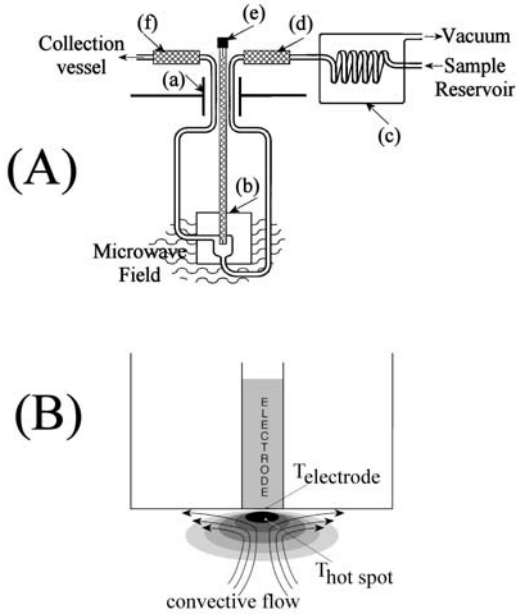
In situ microwave activation of electrochemical processes can be achieved at electrodes placed into a microwave cavity [1,2]. In this presentation, effects and applications of microwave radiation for electron transfer in a wide range of solvent systems from aqueous solutions to organic solvents (DMSO, acetonitrile, DMF, formamide) and in an ionic liquid ($BMIM^+PF_6^-$) are reported. Three order of magnitude current increases and considerable temperature enhancements are observed and explained based on the interaction of microwaves with the liquid (electrolyte) and the physical properties of the liquids or solutions. Electrochemical processes in emulsions are shown to be facile in the presence of microwaves with novel applications in electroanalysis.




[1] M.A. Ghanem, R.G. Compton, B.A. Coles, A. Canals, A. Vuorema, P. John, F. Marken, Microwave activation of the electro-oxidation of glucose in alkaline media, Phys. Chem. Chem. Phys., 7 (2005) 3552-3559.
[2] F. Marken, U.K. Sur, B.A. Coles, R.G. Compton, Focused microwaves in electrochemical processes, Electrochim. Acta, 51 (2006) 2195-2203.