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224 MEC

FORMATION OF OIL/WATER EMULSIONS DUE TO ELECTROCHEMICAL INSTABILITY AT THE LIQUID/LIQUID INTERFACE

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ABSTRACT

We will consider the development of manufacturing processes for continuous emulsification of liquid/liquid systems. Experiments were conducted on emulsions prepared using electrochemical instability of a polarized liquid/liquid interface. Polarization phenomena on the oil/water interface were studied for a wide variety of aqueous systems, including electrolytes and solutions of cationic, anionic, zwitter-ionic and non-ionic surfactants. We will present data on the dynamics of flow patterns, droplets size distribution, and emulsion structures. Then we will discuss the dependence of the efficacy of various emulsification regimes on the electrode configuration.

BIOGRAPHY

Dr. Paul Takhistov received MS in Mechanical Engineering (Honors) from the National Technical University of the Ukraine in 1985, PhD in Physical Chemistry from the Academy of Science of the USSR in 1992, and MS in Chemical Engineering from University of Notre Dame in 1999. He worked in the USSR from 1985 to 1998 and in University of Notre Dame from 1999 to 2002. Then he joined Rutgers University as Associate Professor of the Department of Food Science. Dr. Takhistov's research interests include the dynamics of non-linear interfacial phenomena, micro-fluidic devices and biosensors for the detection of microorganisms, inactivation of pathogens by the use of pulse electric fields, and applications of nanotechnology in food processing and packaging.