



Particular conductive behaviors of emulsion phase inverting

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This paper presents a study of the phenomenon of emulsion phase inversion through a thorough follow-up of emulsion and microemulsion electrical conductivity. A model nonionic surfactant, C18E6, was used in order to study a general case and emphasize the general aspect of this work. This study mainly discloses the experimental origins of the peak-shaped conductivity irregularity within the emulsion inversion. This phenomenon is then shown to be linked to the formation of myelin-like liquid crystals, observed at equilibrium between slide and coverslip, by temperature-monitored polarizing microscopy. The potential links between these new results and the phase inversion temperature method for generating nano-emulsions were also tackled. Finally, this paper provides an original approach, new insights into the phenomena arising when emulsions undergo a phase inversion, in terms of electrical conductivity, liquid crystal formation, phase diagrams, and nonionic surfactant behavior.

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