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Author: Joseph Chamieh Florian Davanier Vincent Jannin
Frédéric Demarne Hervé Cottet

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Size characterization of commercial micelles and microemulsions by Taylor Dispersion Analysis

Joseph Chamieh¹, Florian Davanier¹, Vincent Jannin², Frédéric Demarne², Hervé Cottet^{1*}

¹Institut des Biomolécules Max Mousseron (IBMM, UMR 5247 CNRS-Université de Montpellier, Ecole Nationale Supérieure de Chimie de Montpellier), Place Eugène Bataillon, CC 1706, 34095 Montpellier, France

²GATTEFOSSE SAS, 36, Chemin de Genas, 69804 Saint-Priest, France

Corresponding Author

* Tel: +33-4-6714-3427; fax: +33-4-6763-1046. E-mail address: hcottet@univ-montp2.fr

ABSTRACT

In this work, Taylor dispersion analysis was applied to the measurement of micelles (or microdroplets) molecular diffusion coefficient in micellar (or microemulsion) systems based on neutral / anionic / cationic or zwitterionic surfactants. The choice of the micellar marker and the influence the surfactant / marker concentrations on this determination are studied. Experimental results are compared to those derived from the literature using other experimental techniques. Taylor dispersion analysis, experienced in narrow capillaries, was found to be an efficient and suitable method for micelle (or microdroplet) size measurement due to: the low sample consumption, the absence of filtration requirement of the sample, the broad range of size determination (with no lower limit down to angstroms), the simplicity of the protocol, the possibility to measure the viscosity of surfactant solutions in given conditions and the de-

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