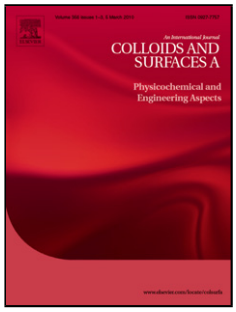

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Author: Jung A.-V. Frochot C. Bersillon J.-L.

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Fluorescence spectroscopy as a specific tool for the interaction study of two surfactants with natural and synthetic organic compounds

Jung A.-V.[1], Frochot C.[2], Bersillon J.-L.[3]

[1] Ecole des Métiers de l'Environnement (EME), Campus de Ker Lann, Avenue Schuman, 35170 Bruz, France, av2jung@live.fr, tel (+33) 2 99 05 88 00, fax (+33) 2 99 05 88 09
[2] Laboratoire Réactions et Génie des procédés (LRGP), UMR 7274, CNRS, Université de Lorraine, 1, rue Grandville BP 2045154001 Nancy, France
[3] Laboratoire Interdisciplinaire des Environnements Continentaux (LIEC), CNRS UMR 7360 UFR SciFA, Université de Lorraine, Site Charmois, 15 avenue du Charmois, 54500 Vandoeuvre les Nancy, France

[1]*Please find in the footnote the abbreviations used in the article*

Abstract

Four different techniques were used to study the binding of cationic cetyltrimethylammonium bromide (CTAB) and non-ionic nonylphenylethoxyl (NPE) surfactants to three synthetic organic components that mimic humic-like aggregates and to

[1]A: area under the emission fluorescence curve for mixture of surfactants and organic materials
A_0: area under the emission fluorescence curve of organic material alone without surfactant
CG: catechol glycine synthetic organic compound
CMC: critical micellar concentration
CTAB: cetyltrimethylammonium bromide surfactant
CT1: catechol tri-glycine (1-3.5 kDa) synthetic organic compound
CT2: catechol tri-glycine (> 8 kDa) synthetic organic compound
DIS: derivative isotherms summation
FI: fluorescence intensity
HA: humic acid
HS: humic-like aggregate
n: refractive index of the media organic matter – surfactant solutions
n_0 : refractive index of organic matter solutions
N1: natural humic compound collected during rainy period (autumn), extracted from suspended matters according to Thurman and Malcolm (1981)
N2: natural humic compound collected during drought period (summer), extracted from suspended matters according to Thurman and Malcolm (1981)
NOM: natural organic matter
NPE: non-ionic nonylphenylethoxyl surfactant
NTU: nephelometric turbidity unit
OD: optical density for mixture of surfactants and organic materials at the excitation wavelength selected for fluorescence emission measurements
OD_0: optical density for organic materials without surfactant at the excitation wavelength selected for fluorescence emission measurements
ϕ_f/ϕ_0: fluorescent quantum yield calculated for each surfactant and organic matter solution