Electronic Supplementary Information

Microemulsification-based method: analysis of monoethylene glycol in samples related to natural gas processing

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Principal component analyses

Principal component analysis (PCA) was applied to evaluate the presence of patterns as regards to the effect of W phase conductivities on data of MEC analytical sensitivity and robustness (absolute errors calculated for concentrations of analyte as highlighted in main text, **ΔΦ**). The obtained graphic of scores is depicted in **Figure S1**. In this case, the independent variables

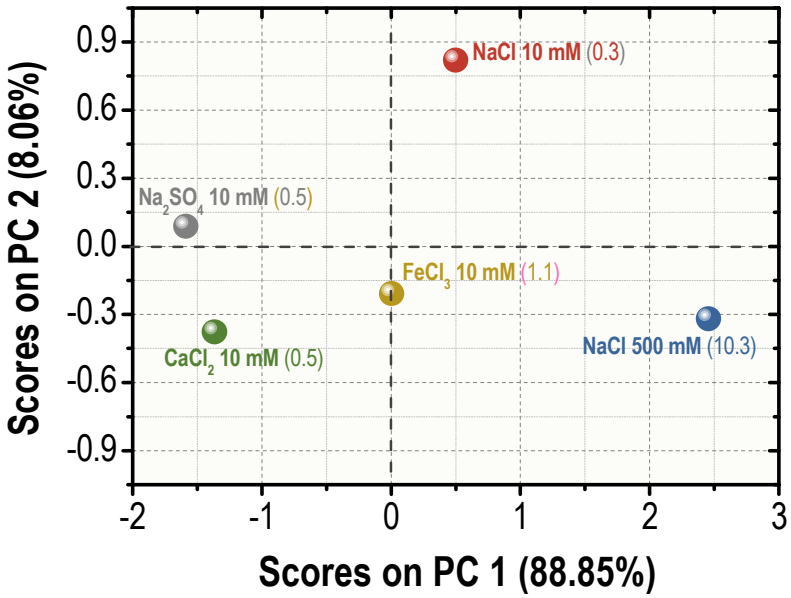
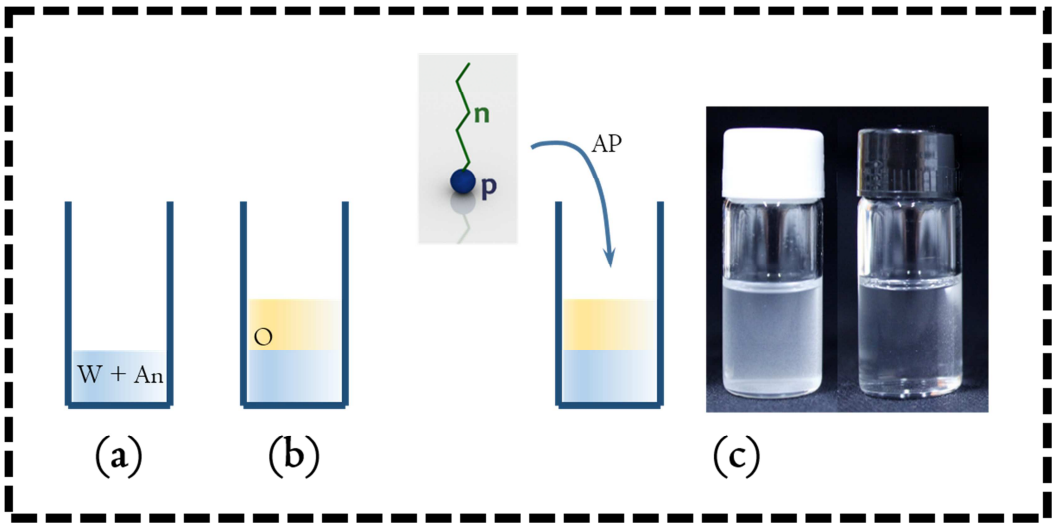


Figure S1. Scores of the principal component analyses conducted to the data of ionic strength-function robustness using the model of PC1 *vs.* PC2.

were the analytical sensitivities in first (S_1) and second (S_2) linear ranges of analytical curves (see **Figure 1** in main text) and $\Delta\Phi$. Autoscaling of data was performed since the variables are measured in different units. Most of variance was represented by two principal components, namely: PC1 (88.85%) and PC2 (8.06%). In checking the graphic of loadings, all of the variables similarly contributed for PC1. For PC2, in turn, the contribution from $\Delta\Phi$ was low. More specifically, the respective variables of $S_1/S_2/\Delta\Phi$ had the following percentage contributions for PC1 and PC2: 33/33/34 and 45/50/5, respectively. As shown in graphic of scores, there was not a pattern relating the average conductivity of the W phases used to investigate the MEC robustness with data set of PCA.

Routine of analysis by MEC

The experimental procedure of MEC when the solvent is polar is depicted in **Scheme S1**.



Scheme S1. Experimental routine of MEC when the solvent is polar. Preparation of the solution of analyte (W + An) in polar solvent (**a**), addition of oil (O) under a specific volume ratio (**b**), and addition of amphiphile (AP) generating initially heterogeneous dispersions (photo on the left) and, then, microemulsions (photo on the right) by vigorously shaken the W-O mixtures (**c**). The minimum volume fractions of AP necessary to produce microemulsion (Φ_{ME}) were used to plot the analytical curves since such a parameter depends on concentrations of analyte. For application to real samples, the procedure is similar. Herein, meanwhile, the sample is applied directly as W phase, "W + An" medium in (**a**). The symbols 'n' and 'p' represent the non-polar and polar groups of the amphiphile molecule, respectively. Dispersions were attained in bottles of glass or Eppendorf® tubes with the aid of micropipettes.