Electronic Supplementary Information

Figure S1. Specific conductivity of [BMIM][Tf$_2$N]/(TX-100:BuOH)/H$_2$O system in a function of IL content for (♦) 0.15:0.85 and (♦) 0.05:0.95 water-to-mixed surfactant mass ratio.

Figure S2. Selected interactions between components of [BMIM][PF$_6$]/(TX-100:BuOH)/H$_2$O microemulsion
Figure S3. Dependences of absorbance of CoCl$_2$ in the H$_2$O/(TX-100:BuOH)/[BMIM][PF$_6$] microemulsion on the IL mass fraction at the lower (A) and higher (B) IL contents determined for L85 line (TX-100/H$_2$O = 0.85/0.15).

Figure S4. Dependences of absorbance of CoCl$_2$ in the H$_2$O/TX-100:BuOH)/[BMIM][Tf$_2$N] microemulsion on the IL mass fraction at the lower (A) and higher (B) IL contents determined for L85 line (TX-100/H$_2$O = 0.85/0.15).
Figure S5. Comparison of the absorption spectra of systems with [BMIM][Tf$_2$N] with or without surfactant. In both cases, the ionic liquid mass fraction equals to 0.45.

Figure S6. Normalized absorption spectrum of CoCl$_2$ in butanol.

Figure S7. The dependences of maximum absorption wavelength of methyl orange dissolved in the microemulsions on ionic liquid content determined for L85 dilution lines. (A) represents [BMIM][PF$_6$]
(◆) and [BMIM][Tf₂N] (◆), (B) represents [BMIM][PF₆]-based ME with cosurfactant (◆) and [BMIM][Tf₂N]-based ME with cosurfactant (◆)

**Figure S8.** FTIR spectra of H₂O/TX-100/[BMIM][Tf₂N] microemulsion at ionic liquid content 0.05; 0.15; 0.25; 0.45; 0.85; 0.95

**Figure S9.** FTIR spectra of H₂O/(TX-100:BuOH)/[BMIM][PF₆] microemulsion at ionic liquid content 0.05; 0.15; 0.25; 0.45; 0.85; 0.95
Figure S10. FTIR spectra of H$_2$O/(TX-100:BuOH)/[BMIM][Tf$_2$N] microemulsion at ionic liquid content 0.05; 0.15; 0.25; 0.45; 0.85; 0.95