A Combined Wetting and Scattering Study of the Near Surface Ordering in Sugar Surfactant Based Bicontinuous Microemulsions at Hydrophilic and Hydrophobic Surfaces

-Supporting Information-

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1. Phase diagram of the quaternary system water/cyclohexane/Glucopon220/pentanol

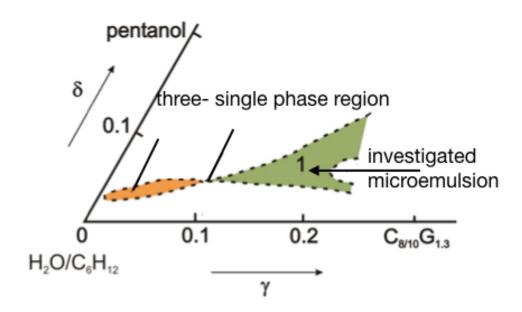


Figure S1: Fish-type cut through the phase tetrahedron of the quaternary phase system water/cyclohexane/Glucopon220/pentanol at constant water to oil ratio (0.5) and constant temperature. The composition of the investigated bicontinuous microemulsion is indicated.

2. Wetting behavior and surface energy determination

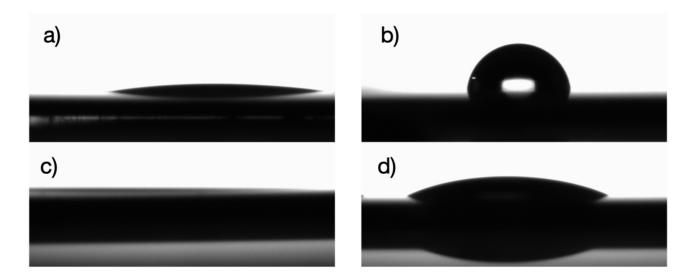


Figure S2: Examples of static contact angles of water at a) h-Si and b) hp-Si. Images c) and d) show the results for the aqueous solution of Glucopon 220 (20 mmol/L) at both substrates, h-Si resp. hp-Si.

The surface energies of h-Si and hp-Si were determined with the OWRK method from the measurement of the contact angles of water, diiodomethanue and glycerol at 25° C. For each liquid, 3-5 sessile drop were measured. Using the OCA20 software, the values of small contact angles were determined with the tangent leaning and larger contact angles with the elliptic method.

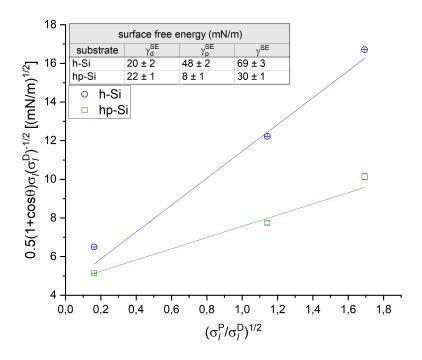


Figure S3: OWRK Plot for the determination of the surface energies of h-Si (hydrophilic) and hp-Si (hydrophobic) substrates.

3. Full integral evaluation of the NSE/GINSES data according to the Zilman-Granek theory

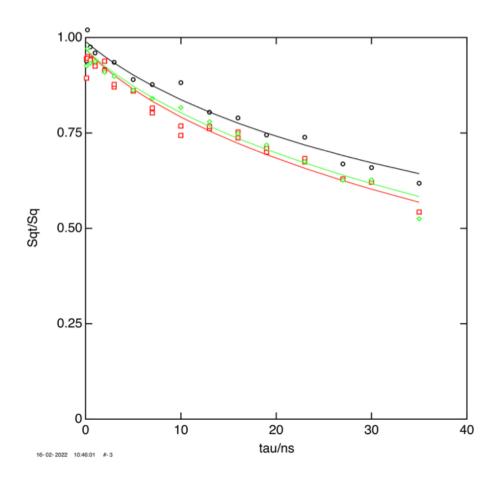


Figure S4: Normalized intermediate scattering functions as shown in Figure 4 of the paper evaluated withe full integral analysis according to the Zilman-Granek theory.

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keep_pha = 1.000000E+00
zero_pof = 0.000000E+00
fit_pha = 1.000000E+00
                                                                                                                                                                                                                                      w_fitpha
 theory+ zghf
                             = 7.00000E+01+ 0.00E+00 0.0E+00
= 1.00000E+00+ 0.00E+00 0.0E+00
= 1.20000E+01+ 0.00E+00 0.0E+00
                                                                                                                                                                                                                                      chisqlim
raterrli
  nxi
                            = 1.20000E+01+- 0.00E+00 0.0E+00

= 0.00000E+00+- 0.00E+00 0.0E+00

= 8.20000E-01+- 0.00E+00 0.0E+00

= 2.40000E-04+- 0.00E+00 0.0E+00

= 4.21347E+00+- 3.85E-02 1.0E+00

= 9.60000E-01+- 0.00E+00 0.0E+00

= 1.00000E+04+- 0.00E+00 0.0E+00

= 0.00000E+00+- 0.00E+00 0.0E+00

= 0.00000E+00+- 0.00E+00 0.0E+00
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= 1.000000E+01
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  axi
                                                                                                                   raterrli
fitGINSE
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  amp
  Ibar
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                                                                                                                   GINSES_sw Wed Jan 25 15:50:00 2012

q = 8.000000E+02

trans_fa = 1.000000E+00

volf_bgr = 1.000000E+00
                                                                                                                                                                                                                                      zg1amp
zg1lbar
  sigtx
  orav
trans_fa
volf_bgr
temp
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zg1elsub = 0.000000E
zg1Qangl = 4.500000E
zg1MonkD = 0.000000E
                                                                                                                                          = 3.000000E+02
= 1.477200E+04
= 0.000000E+00
                                                                                                                    ref
                                                                                                                    bgr
                                                                                                                   keep_pha = 1.000000E+00
zero_pof = 0.000000E+00
fit_pha = 1.000000E+00
                       = 8.00000E-02
= 1.00000E+00
= 1.00000E+00
= 3.00000E+02
                                                                                                                                                                                                                                      ezg1xi
ezg1nxi
                                                                                                                                                                                                                                                          = 3.571685E-01
= 0.000000E+00
  trans_fa
  volf_bgr
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ezg1eta = 0.000000E+00
ezg1axi = 0.000000E+00
                       = 1.477100E+04
= 0.000000E+00
                                                                                                                    windowpo = 8.000000E+00
ud_strat = 0.000000E+00
  bar
 keep_pha = 1.000000E+00
zero_pof = 0.000000E+00
                                                                                                                                                                                                                                     ezg1amp = 0.000000E+00
ezg1lbar = 4.393563E+00
ezg1sigt = 0.000000E+00
ezg1orav = 0.000000E+00
                                                                                                                   chisqlim
raterrli
                       = 1.000000E+00
= 4.000000E+00
  fit_pha
  window
                                                                                                                    zg1xi
 window = 4.00000E+00

windowpo = 8.000000E+00

ud_strat = 0.000000E+00

w_fitpha = 0.000000E+00

chisqlim = 1.000000E+01

raterrli = 2.000000E+00
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ezg1elsu = 0.000000E+00
ezg1Qang = 0.000000E+00
ezg1Monk = 0.000000E+00
ssq = 5.325533E+00
parwght = 0.000000E+00
GINSE 10 14766000 sca
                                                                                                                    zg1aa
                                                                                                                    zg1akapp = 8.200000E-
zg1eta = 2.40000E-
zg1axi = 4.030153E-
zg1amp = 9.70000E-
                                                                                                                                                                                                                                     ssq = 5.3
parwght = 0.0
GINSE_10 14
GINSES_sw Fri
 fitbulkm - 14770000 scale 1.000000E+00
bulkmuE Tue Jan 31 12:25:07 2012
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= 8.000000E-02
= 1.000000E+00
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                       = 8.000000E-02
= 1.000000E+00
  trans fa
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zg1orav
  volf_bgr
                       = 1.000000E+00
                       = 3.000000E+02
= 1.477100E+04
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zg1Qangl = 4.500000E-02
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temp
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ref
                                                                                                                  zġ1elsub = 4.500000E-02

zg1MonkD = 0.000000E+00

ezg1xi = 3.571685E-01

ezg1xi = 0.000000E+00

ezg1aa = 0.00000E+00

ezg1aa = 0.000000E+00
 bgr = 0.000000E+00
keep_pha = 1.000000E+00
zero_pof = 0.000000E+00
fit_pha = 1.000000E+00
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zero_pof = 0.000000E+00
fit_pha = 1.000000E+00
window = 4.000000E+00
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ezg1akap = 0.000000E+00
 window = 4.000000E+00
windowpo = 8.000000E+00
                                                                                                                   ezg1eta = 0.000000E+00
ezg1axi = 0.000000E+00
 ud_strat = 0.000000E+00
w_fitpha = 0.000000E+00
                                                                                                                                                                                                                                      ud_strat
w_fitpha
  chisqlim
                       = 1.000000E+01
  raterrli
                       = 2.000000E+00
                       = 7.000000E+00
= 1.000000E+00
= 1.200000E+01
  zg1xi
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  zg1nxi
                                                                                                                   ezg1orav = 0.000000E+00
ezg1elsu = 0.000000E+00
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GINSES_sw Fri Jan 27 09:04
  zg1aa
 zg1na = 0.000000E+00
zg1akapp = 8.200000E-01
zg1eta = 2.400000E-04
zg1axi = 4.030153E+00
                                                                                                                   ezg12ang = 0.00000E+00
ezg1Monk = 0.00000E+00
ssq = 5.325533E+00
parwght = 0.000000E+00
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GINSE 10 14765000 scale 1.000000E+00
GINSES_sw Thu Jan 26 15:36:38 2012
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                        = 9.900000E-01
  zg1amp
                        = 1.000000E+04
  zg1lbar
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                                                                                                                   q = 8.00000E-02
trans_fa = 1.00000E+00
volf_bgr = 1.00000E+00
                       = 0.00000E+00
= 0.00000E+00
= 0.00000E+00
  zg1sigtx
 zg1orav
zg1elsub
 zg1Qangl = 1.000000E-02
zg1MonkD = 0.000000E+00
ezg1xi = 0.000000E+00
ezg1nxi = 0.000000E+00
                                                                                                                                         = 3.000000E+02
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= 0.000000E+00
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ref
                       = 0.000000E+00
= 0.000000E+00
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fit_pha = 1.000000E+00
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  ezg1aa
  ezg1na
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  ezg1akap = 0.000000E+00
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ezg1oray = 0.000000E+00
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ud_strat = 0.000000E+00
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                                                                                                                                        = 0.000000E+00
= 1.000000E+01
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zg1eta = 2.400000E-04
zg1axi = 4.030153E+00
                                                                                                                    raterrli = 2.000000E+00
fitGINSE - 14765000 scale
 ezg1orav = 0.000000E+00

ezg1elsu = 0.000000E+00

ezg1Qang = 0.000000E+00

ezg1Monk = 0.000000E+00

ssq = 1.492802E+00

parwght = 0.00000E+00

GINSE_10 14763000 scale 1.000000

GINSES_sw Wed Jan 25 15:50:00 2012
                                                                                                                    GINSES_sw Thu Jan 26 15:36:38 2012
q = 8.000000E-02
trans_fa = 1.000000E+00
                                                                                                                                                                                                                                      zg1amp
zg1lbar
                                                                                                                                        = 1.000000E+00
= 1.000000E+00
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zg1elsub
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                                                                 1.000000E+00
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= 0.000000E+00
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                       = 8.000000E-02
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ezg1nxi
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                       = 1.477200E+04
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ezg1eta = 0.000000E+00
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Figure S5: Fitting parameters and results for the fits shown in Figure S4.