Supporting Information

Self-assembled mesoscopic surface domains of fluorocarbon-hydrocarbon diblocks can form at zero surface pressure. Tilting of solid-like hydrocarbon moieties compensates for cross-section mismatch with fluorocarbon moieties

Christian Schwieger, Xianhe Liu, Marie Pierre Krafft*

Content:

Sets of experimental and simulated IRRA spectra in the OH and CH_2 stretching vibrational range recorded at different compression states of a *F*8*H*16 monolayer. These spectra were used to determine i) the tilt angle of the *H*16 moiety and ii) the average layer thickness.

30 Å²/molecule

Alkyl chain tilt

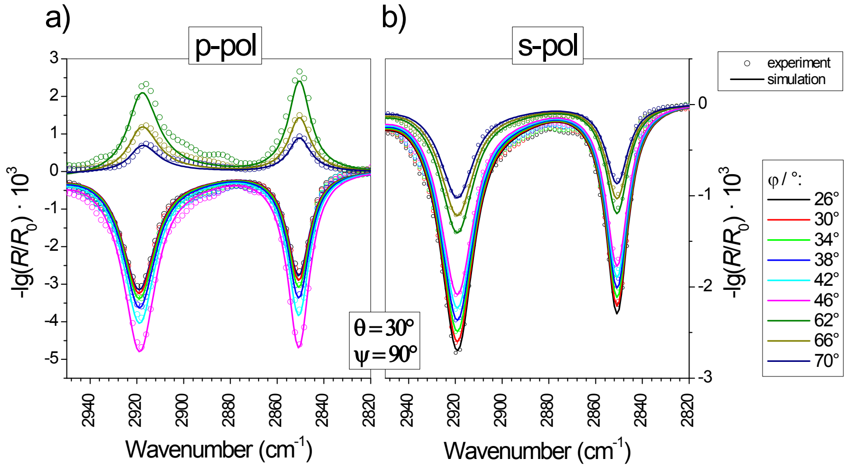

Figure S1: Experimental (symbols) and best fitting simulated (lines) IRRA spectra of *F*8*H*16 at 30 Å²/molecule in the range of the antisymmetric and symmetric CH_2 stretching vibrations. The spectra were recorded in a) p-polarization and b) s-polarization at different angles of incidence (φ) of the IR beam. All the spectra were fitted in one global fit with the same parameter. The best fit was achieved with an alkyl block tilt angle θ = 30° and a twist angle ψ = 90°.

Layer thickness

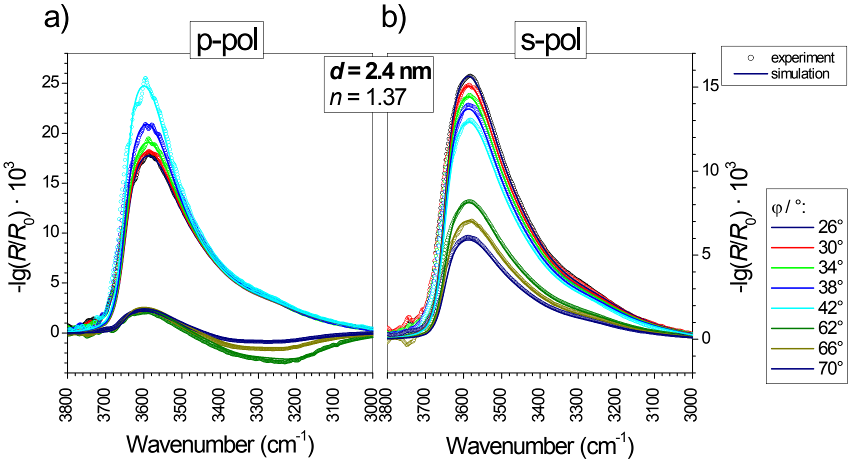

Figure S2: Experimental (symbols) and best fitting simulated (lines) IRRA spectra of *F*8*H*16 at 30 Å²/molecule in the range of the OH stretching vibrations originating from the water subphase. The spectra were recorded in a) p-polarization and b) s-polarization at various angles of incidence (φ) of the IR beam. A layer thickness *d* = 2.4 nm and an average refractive index *n* = 1.37 were determined from the fit.

60 Å²/molecule

Alkyl chain tilt

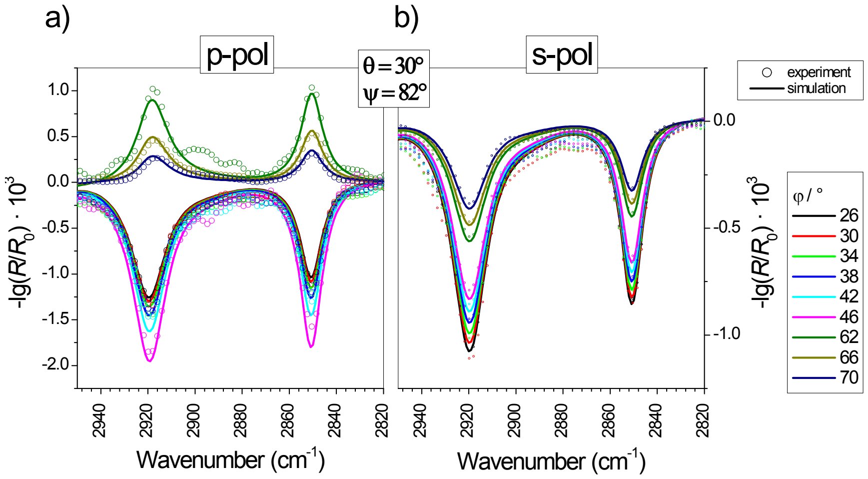

Figure S3: Experimental (symbols) and best fitting simulated (lines) IRRA spectra of *F*8*H*16 at 60 Å²/molecule in the range of the antisymmetric and symmetric CH_2 stretching vibrations. The spectra were recorded in a) p-polarization and b) s-polarization at different angles of incidence (φ) of the IR beam. All the spectra were fitted in one global fit with the same parameter. The best fit was achieved with an alkyl block tilt angle θ = 30° and a twist angle ψ = 82°.

Layer thickness

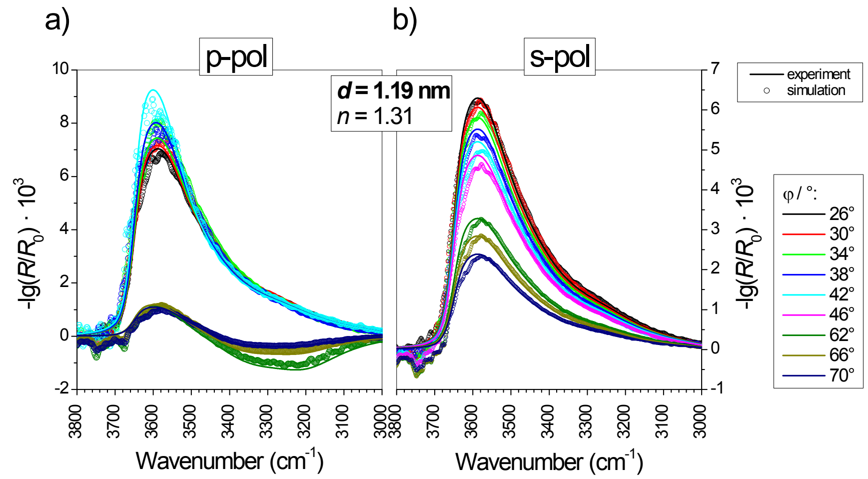

Figure S4: Experimental (symbols) and best fitting simulated (lines) IRRA spectra of *F*8*H*16 at 60 Å²/molecule in the range of the OH stretching vibrations originating from the water subphase. The spectra were recorded in a) p-polarization and b) s-polarization at various angles of incidence (φ) of the IR beam. A layer thickness d = 1.19 nm and an average refractive index n = 1.31 were determined from the fit, from which an actual domain thickness of 2.4 nm was calculated.

80 Å^2/molecule

Alkyl chain tilt

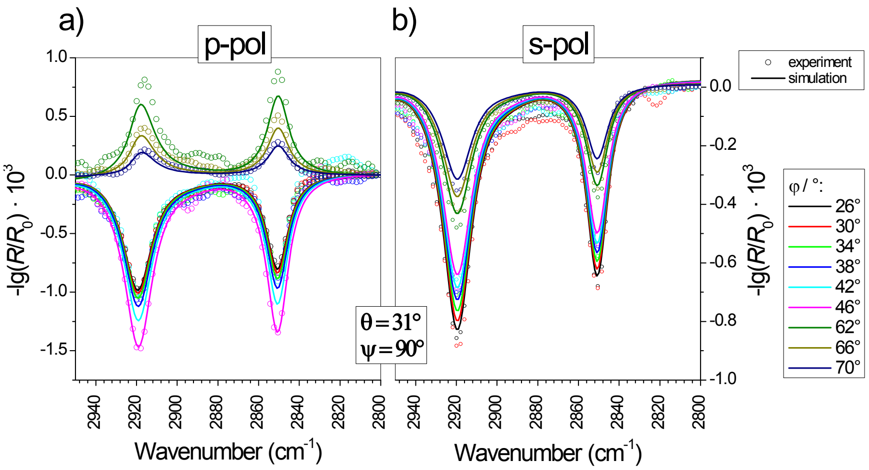

Figure S5: Experimental (symbols) and best fitting simulated (lines) IRRA spectra of *F*8*H*16 at 80 Å^2/molecule in the range of the antisymmetric and symmetric CH$_2$ stretching vibrations. The spectra were recorded in a) p-polarization and b) s-polarization at different angles of incidence (φ) of the IR beam. All the spectra were fitted in one global fit with the same parameter. The best fit was achieved with an alkyl block tilt angle θ = 31° and a twist angle ψ = 90°.

Layer thickness

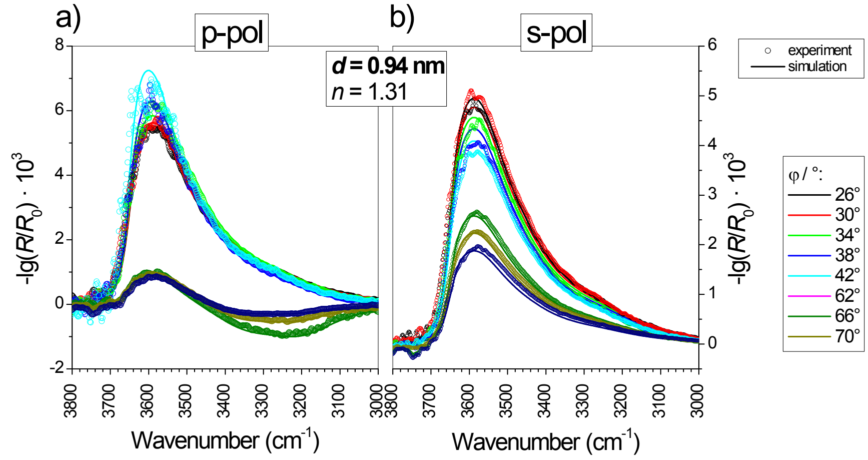

Figure S6: Experimental (symbols) and best fitting simulated (lines) IRRA spectra of *F*8*H*16 at 80 Å^2/molecule in the range of the OH stretching vibrations originating from the water subphase. The spectra were recorded in a) p-polarization and b) s-polarization at various angles of incidence (φ) of the IR beam. A layer thickness d = 0.94 nm and an average refractive index n = 1.31 were determined from the fit, from which an actual domain thickness of 2.5 nm was calculated.

100 Å²/molecule

Alkyl chain tilt

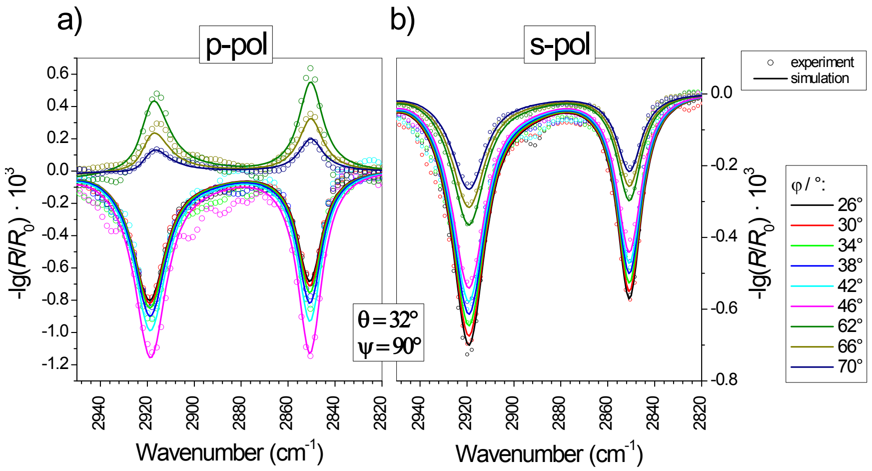

Figure S7: Experimental (symbols) and best fitting simulated (lines) IRRA spectra of *F*8*H*16 at 100 Å²/molecule in the range of the antisymmetric and symmetric CH_2 stretching vibrations. The spectra were recorded in a) p-polarization and b) s-polarization at different angles of incidence (φ) of the IR beam. All the spectra were fitted in one global fit with the same parameter. The best fit was achieved with an alkyl block tilt angle θ = 32° and a twist angle ψ = 90°.

Layer thickness

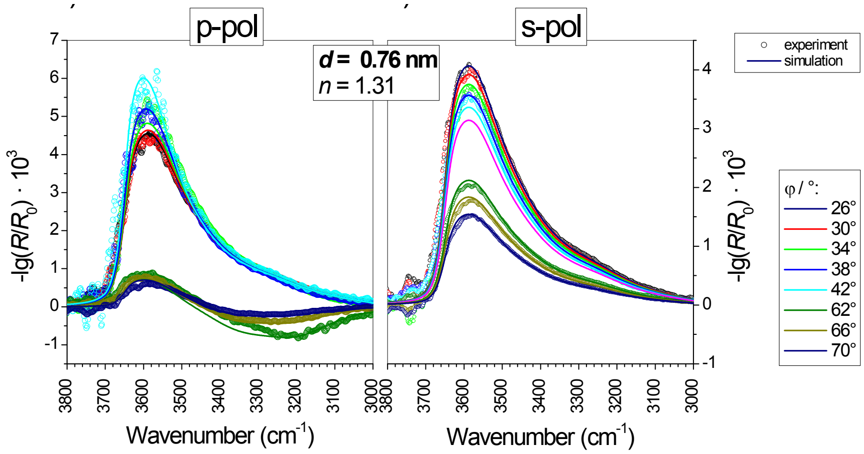

Figure S8: Experimental (symbols) and best fitting simulated (lines) IRRA spectra of *F*8*H*16 at 100 Å²/molecule in the range of the OH stretching vibrations originating from the water subphase. The spectra were recorded in a) p-polarization and b) s-polarization at various angles of incidence (φ) of the IR beam. A layer thickness *d* = 0.76 nm and a refractive index *n* = 1.31 were determined from the fit, from which an actual domain thickness of 2.5 nm was calculated.