Surface Chemistry and Spectroscopy of UG8 Asphaltene Langmuir film, Part 2

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Supporting Information

Figure S1. Amplitude versus frequency showing the resonant frequency at 147.15 kHz (peak maximum) and the working frequency of 147.05 kHz in repulsive dominant regime.

Figure S2. Stability for UG8 asphaltene Langmuir film spread from chloroform (molecular area as a function of time under constant surface pressure of 30 mN/m) (A) and surface pressure relaxation as a function of time under constant area (target surface pressure was 30 mN/m) (B).

**Mathematical treatment to show the conversion from concentration to surface density in
Langmuir films**

$$A = \varepsilon \times b \times c$$

$$c = \frac{\text{mol}}{L} = \frac{\text{mol}}{1000 \text{ cm}^3} \text{ or } \frac{\text{mg}}{\text{mL}} = \frac{\text{mg}}{\text{cm}^3}$$

$$b \times c = \text{cm} \times \frac{\text{mol}}{1000 \text{ cm}^3} = \frac{\text{mol}}{1000 \text{ cm}^2} \text{ or } \frac{\text{mg}}{\text{cm}^2} = \rho$$

$$A = \varepsilon \times \rho; \varepsilon = \text{const.}$$

$$\Rightarrow A \propto \rho$$

A = absorbance

ε = molar absorptivity

c = concentration

ρ = surface density