Supporting Information

Phase behavior of the bilayers containing hydrogenated soy lecithin and *β*-sitosteryl sulfate

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Number of pages: 6
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1. POM Textures for samples with 40 wt% lipid concentration

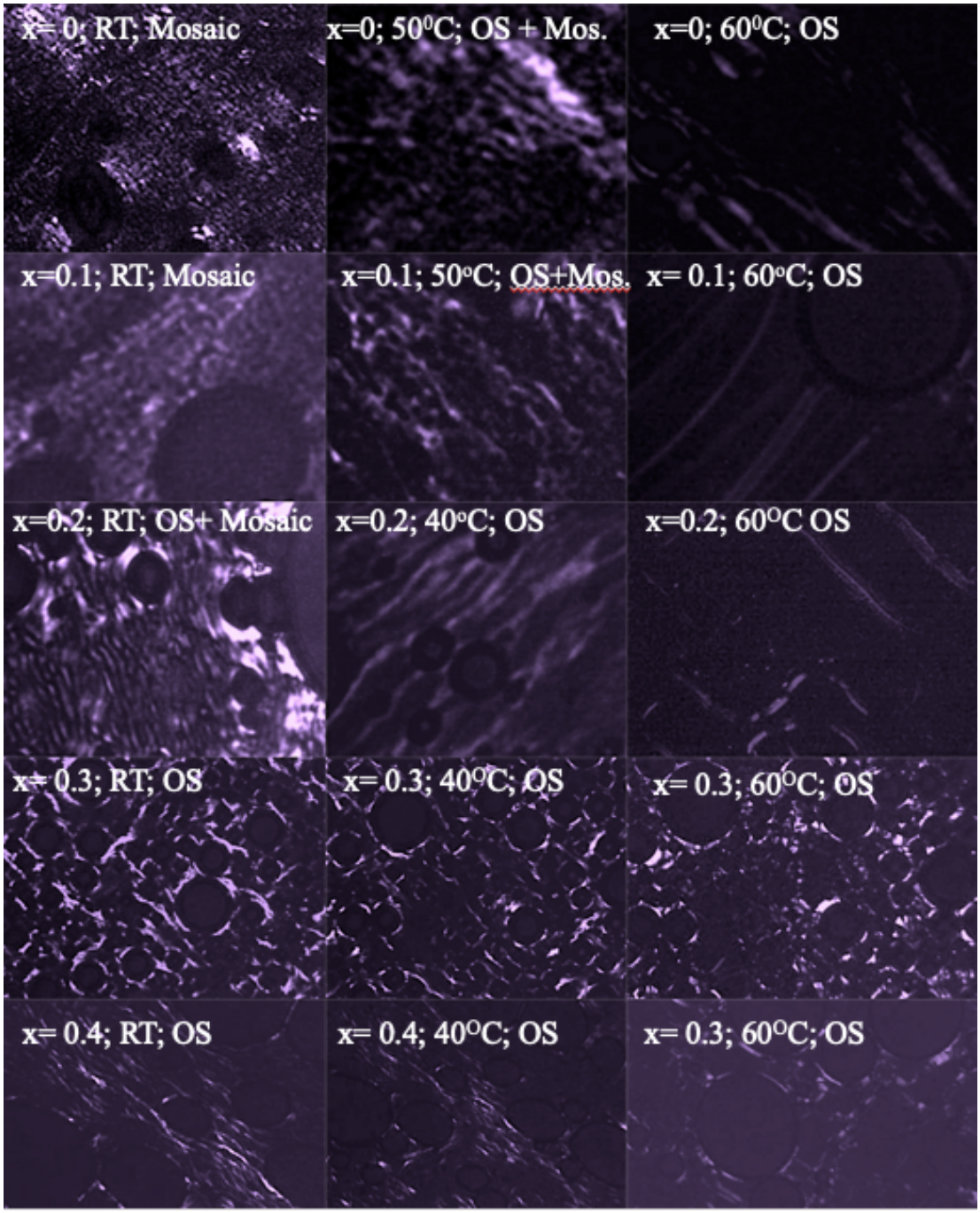


Figure S1: POM textures for the HLC-PSO_4 samples with 40 wt% of lipids. *x* stands for the mole fraction of PSO_4.

2. **Change in viscosity with increasing mole fraction of PSO_4 for 40 wt% lipid samples.**

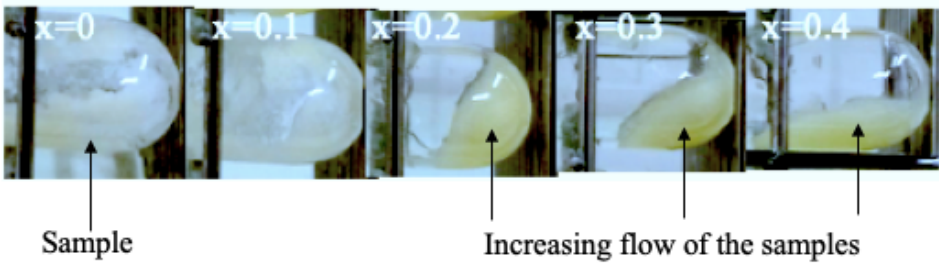
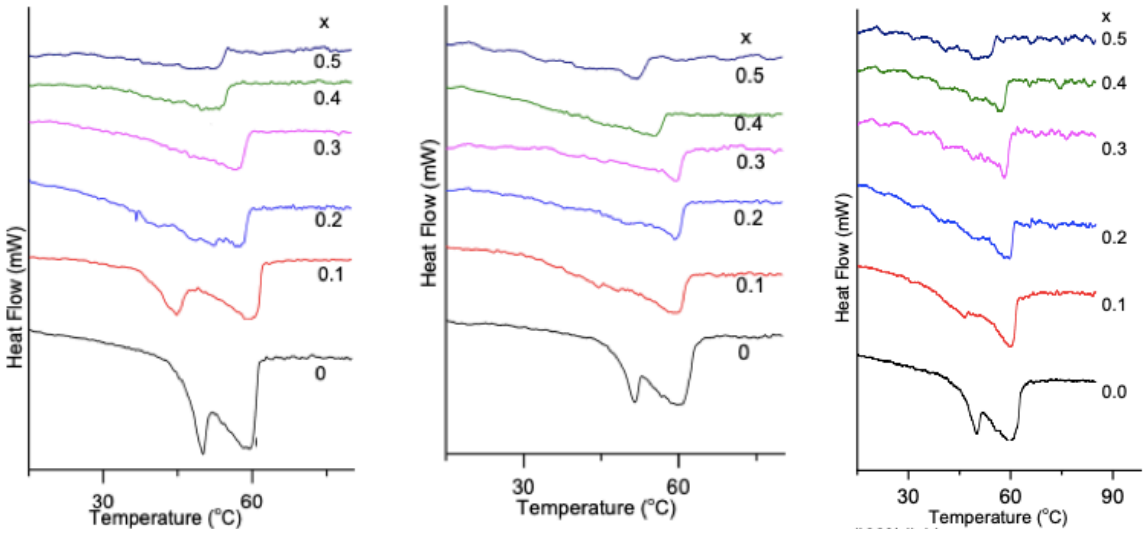


Figure S2. Picture showing the gradual decrease of viscosity of the samples (40 wt% lipid) with increasing mole fraction of PSO_4 (x). The test-tubes are tilted to the same angle and the softening of the samples and the increasing flow as a function of x is visualized. It indicates that PSO_4 enhances the fluidity of HLC bilayers.

3. **DSC thermograms for samples with lower concentrations**



a) 50 % Lipid b) 40 % Lipid c) 30 % lipid

Figure S3: DSC heating endotherms for the HLC-PSO_4 samples with 50 wt% (a), 40 wt% (b), and 30 wt% (c) lipid concentrations, respectively.

4. SAXS and WAXS profiles for samples with 50, 40, and 30 wt% lipids

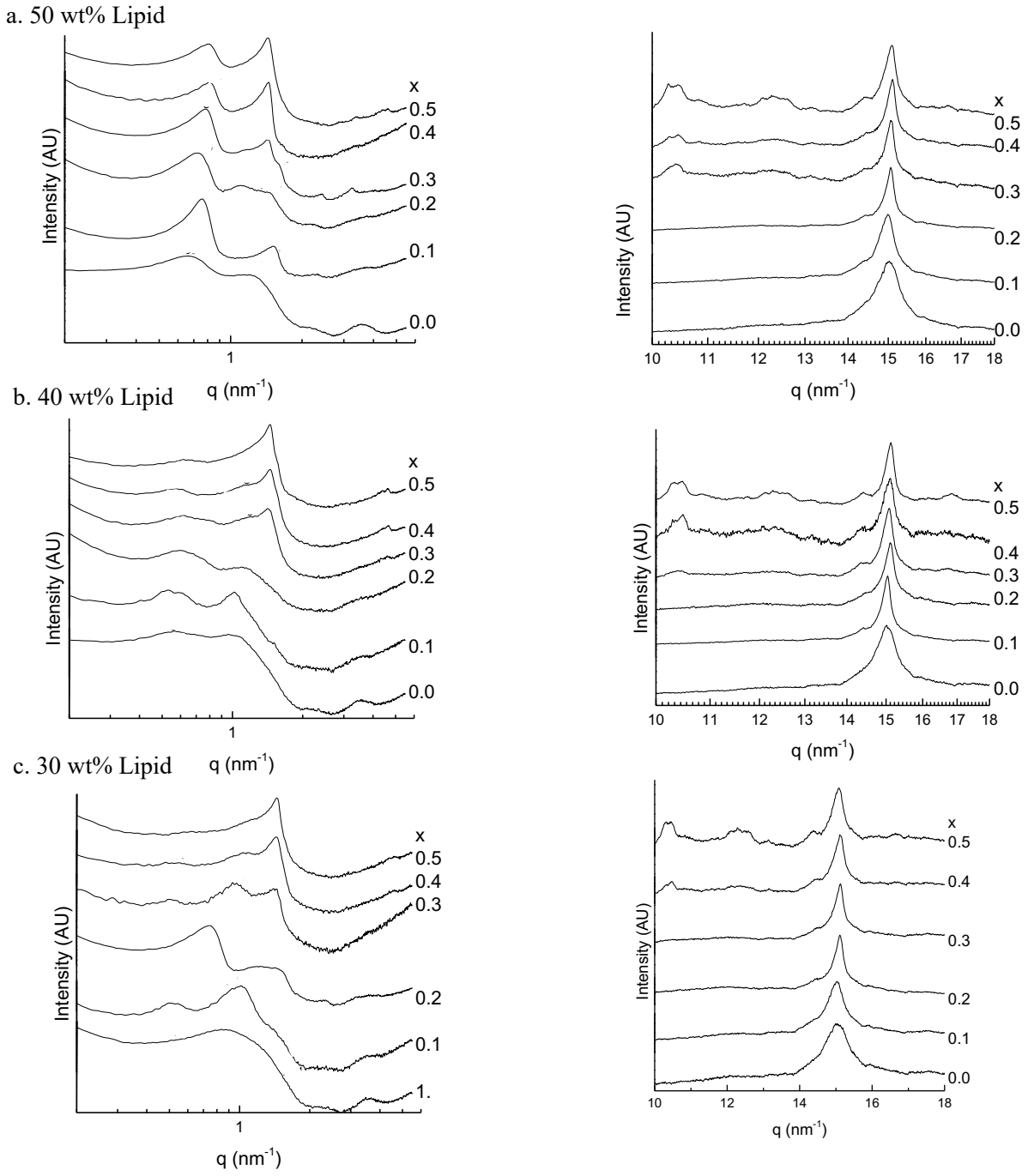


Figure S4: SAXS (left) and WAXS (right) profiles for the HLC-PSO_4 samples with 50 (a), 40 (b), and 30 (c) wt% lipids, respectively.

5. WAXS evidence for the $L_{\beta 1}$ and $L_{\beta 2}$ phases

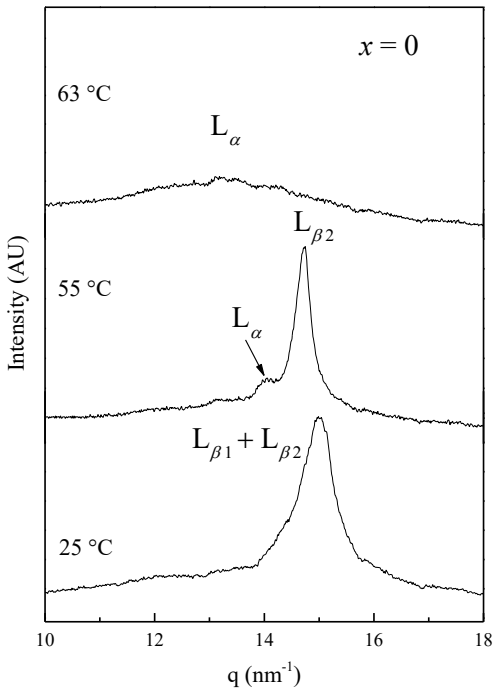


Figure S5. WAXS profiles for the $x = 0$ sample at different temperatures. The profile at 25 °C represents gel phase. At 55 °C, a part of it on the left side indicates formation of the L_{α} phase. Narrowing of the peak at 55 °C indicates that the peak at 25 °C is resulted from overlapping of the two gel-phase peaks. As the gel-phase peaks at both temperatures lack the shoulder characteristic of the L_{β}' (tilted gel phase) phase, it can be concluded that both gel phases are L_{β} (without tilt). At 63 °C, both gel phases have already transformed into the L_{α} phase.

6. Additional phase diagrams

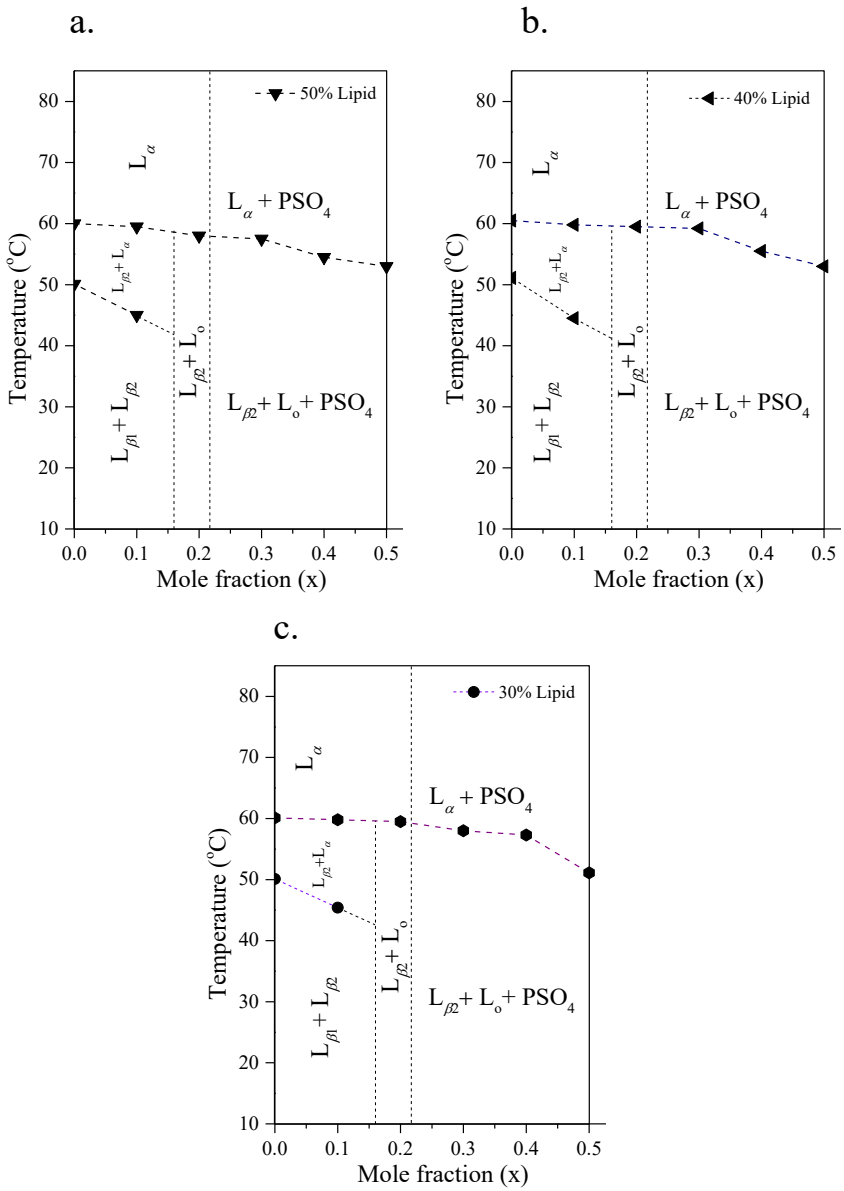


Figure S6. Temperature-composition binary phase diagrams for the HLC-PSO_4 systems derived from 50 (a), 40 (b) and 30 (c) wt % of lipids. They are comparable to the phase diagram shown in Fig. 7 of the paper.