

## Supplement 1 - Light background subtraction

Supplementary information for:

### **Order parameters and areas in fluid-phase oriented lipid membranes using wide angle x-ray scattering**

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Fig. S1.1 shows examples of oriented WAXS images for the sample, light background, and subtracted image for data taken at the CHESS D-1 and G-1 stations. There is more than one mylar scattering ring (see Fig. S1.1B and S1.1E) because each of the four sample chamber mylar windows is a different distance from the detector. For the mylar windows upstream (1 and 2) from the sample, the sample cuts off the scattering below the equator, while the sample does not cut off the scattering for the downstream windows (3 and 4). Scattering from window 4 is not visible in Fig. S1.1E because the beamstop was moved closer to the sample chamber in the G-1 experiment.

There are some obvious differences in the images from the two different runs. The WAXS beamstop in the D-1 experiment was a tall vertical strip (see left side of Fig. S1.1A-C), whereas the top edge of the shorter beamstop for the G-1 run is visible (see bottom left in Fig. S1.1D-F). The fuzzy shadows on the upper portions of the images are due to styrofoam and wires (used for heating the windows) around the sample chamber exit window. These shadows subtract out, as can be seen by comparing Fig. S1.1A with Fig. S1.1C and Fig. S1.1D with Fig. S1.1F. Because the x-ray wavelength was larger in the G-1 setup than the D-1 setup, the exit windows allowed for a slightly smaller  $q_z$  range in the G-1 run (compare Fig. S1.1F to Fig. S1.1C).

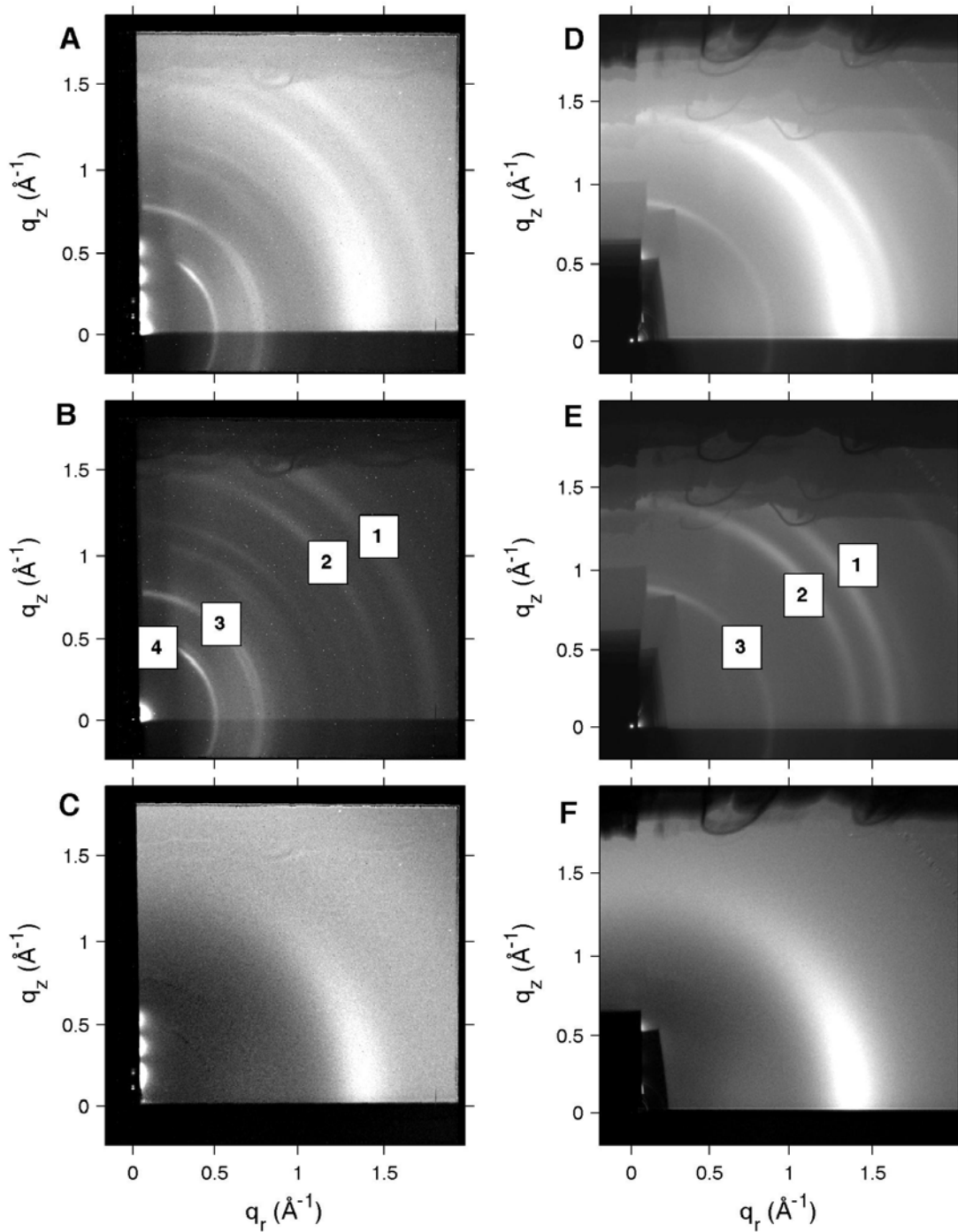


Figure S1.1. The left panel shows examples of 2D WAXS images for: (A) a DOPC sample before light background subtraction, (B) the light background, and (C) the sample after light background subtraction (D-1 station, February 2006). The right panel (D-F) shows the corresponding images for a DOPC sample (G-1 station, October 2006).