Correction to Stiffness of Lipid Monolayers with Phase Coexistence

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The main purpose of the referred article was to investigate the compressibility of mixed monolayers at pressures and compositions in the two-phase region of the phase diagram in order to analyze the effect of the mechanical properties of each phase on the stiffness of the composite. The main conclusion was that the stiffness of the composite is dominated by the mechanical properties of the continuous phase.

We also have noticed in the article that the effect of the presence of the domains on the film stiffness in the dilute regime (low Ac% values) did not comply with the observed general behavior. In light of those results, we have hypothesized that the different behavior was probably derived from different domain−domain interactions or differences in the shape/size of the domains between the systems. In order to get insight into this issue, we performed additional independent experiments for each system. We found that for values of Ac%-Pc in the range of −10 to −30% (values of Ac% of 20 ± 10% lower than for Pc), the normalized compressibility may vary within 0.3 unit. In the figures we show the results for seven experiments for monolayers of DAPC/DMPC at 20 mN/m, where κ_{norm} varies within 0.1 to 0.7 (average value of 0.36 ± 0.25). Therefore, the difference previously found when comparing the systems is within the experimental error. This variance comes from the errors derived from the compressibility modulus (relative error within 5−10%), the error in the film composition (relative error of 5%), the error in the determination of Ac% (within 5−10%), and the natural variability of Pc, i.e., for the same mixture, the condensed phase percolates at the lateral pressure under study at Ac% values that vary by 5%. Therefore, we now conclude that the possible differences within systems in the dilute region are not significant and thus they cannot be ascribed to a film property.
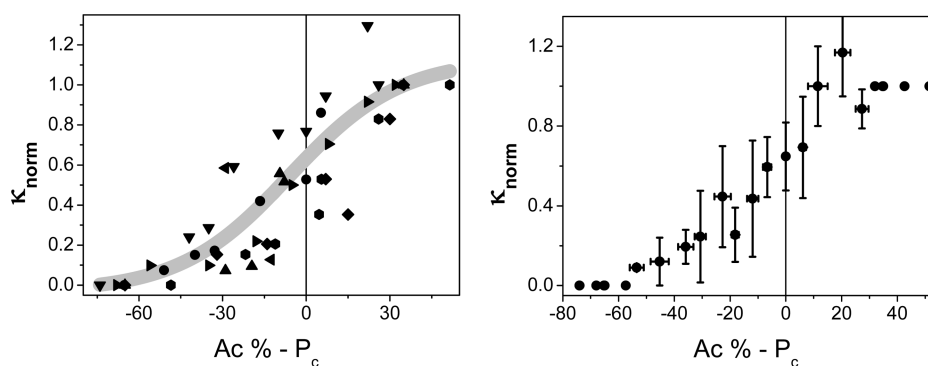
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(Left panel) Data for seven independent results. The gray line serves to guide the eye. (Right panel) Average for the values of κ_{norm} that are shown in the left panel for intervals of (Ac%-Pc) of ±2 to 3.