Electronic Supplementary Material (ESI) for Soft Matter.

Supplementary Information

Dynamics and Yielding of Binary Self-Suspended Nanoparticle Fluids

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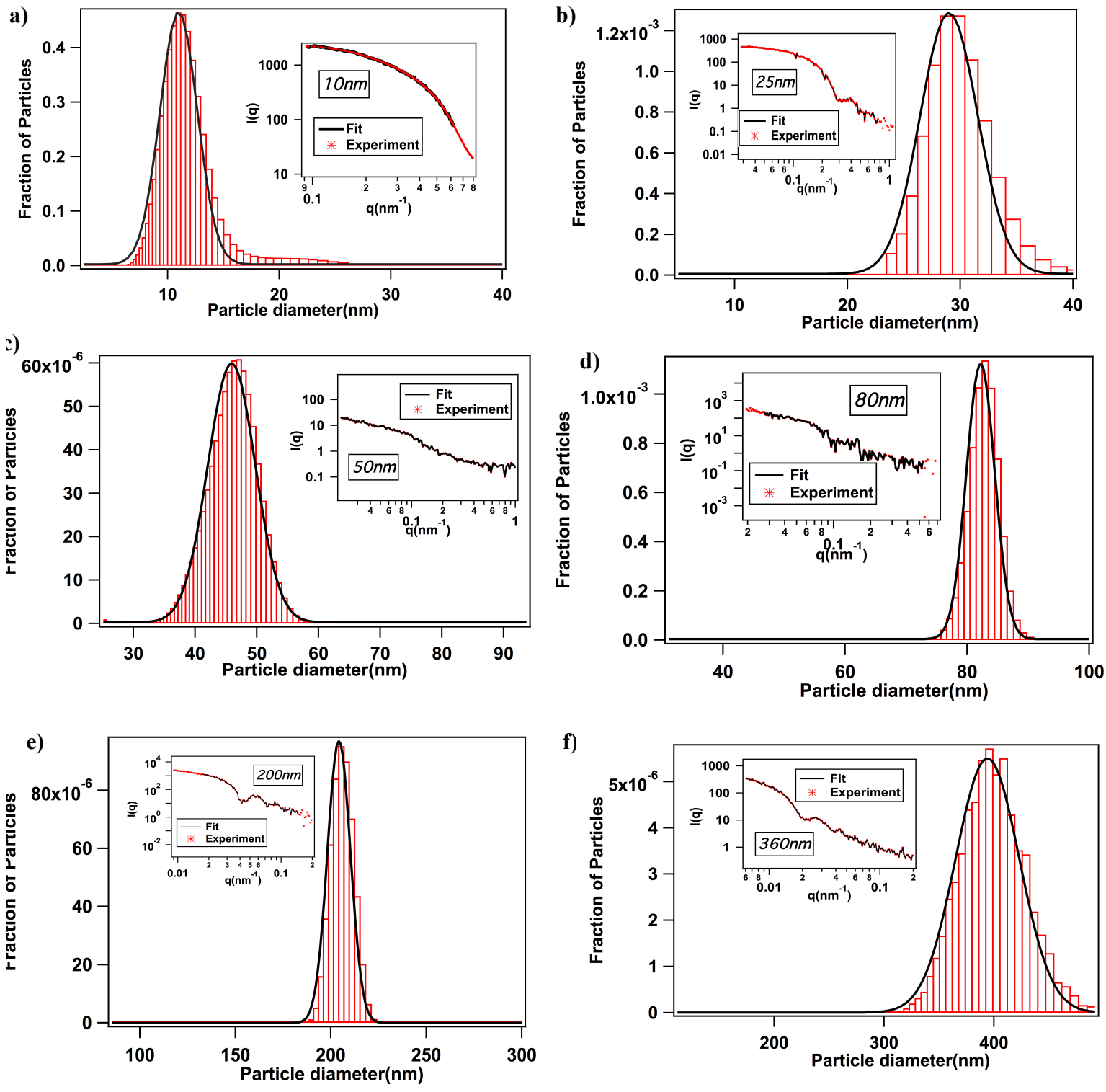

Figure S1. Size distribution of particles as determine from SAXS analysis for **a)** 10nm **b)**25nm **c)** 50nm **d)** 80nm **e)** 200nm **f)** 360nm. The insets are the experimental scattering intensities (red dots) and the fit to data (black lines) for respective sizes.

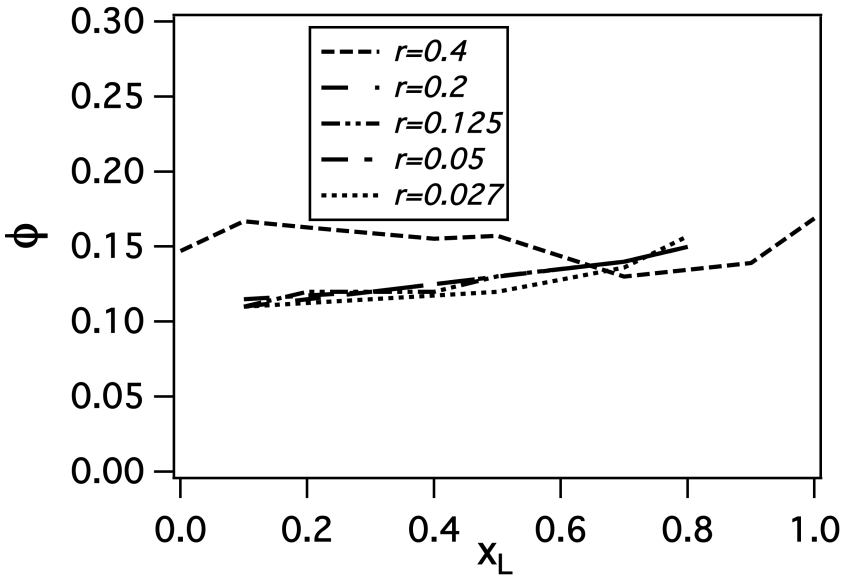

Figure S2. Variation of particle core volume fraction, Φ with x_L for different size ratios. The volume fraction is found to be around 0.10-0.15 for different systems.

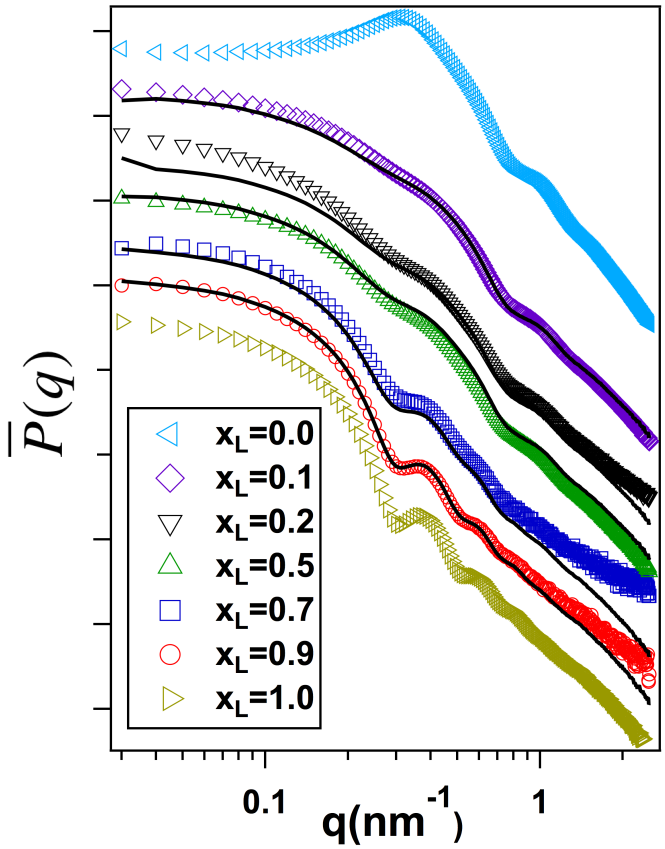

Figure S3. Form factors for different systems at r = 0.4 on a log-log plot. The open symbols are experimental values and the black lines are mole fraction-weighted averages of the measured form factors for the pure species as used in literature.[45-47]

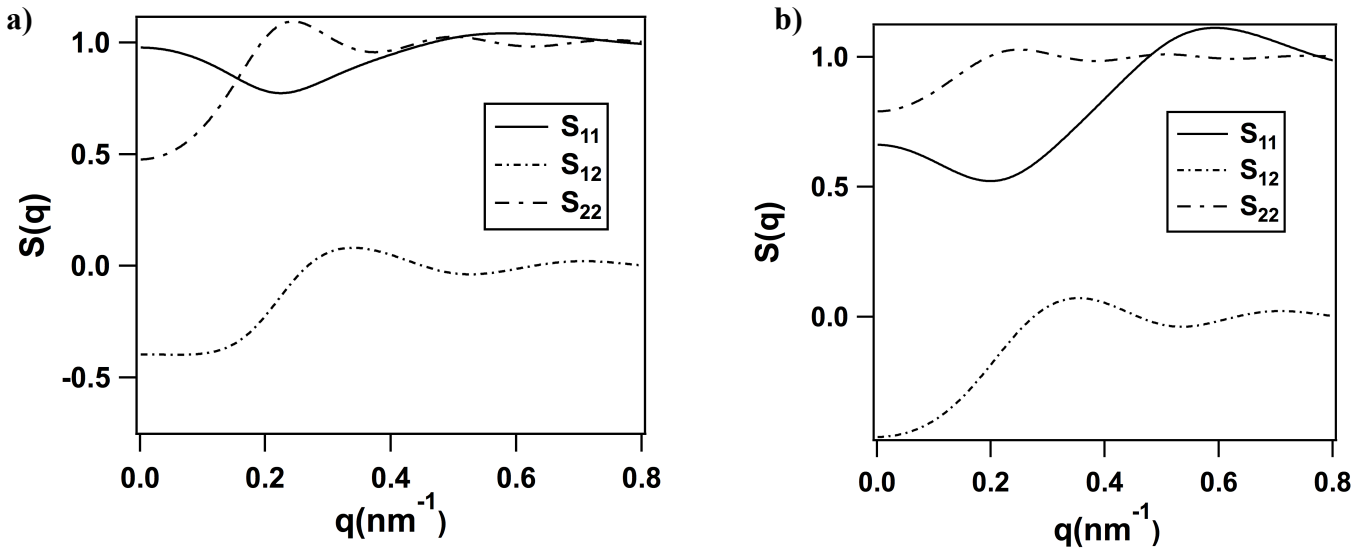

Figure S4. Comparison of S_{11}, S_{12} and S_{22} components of $S(q)$ for **a)** $x_L = 0.7$ and **b)** $x_L = 0.25$.

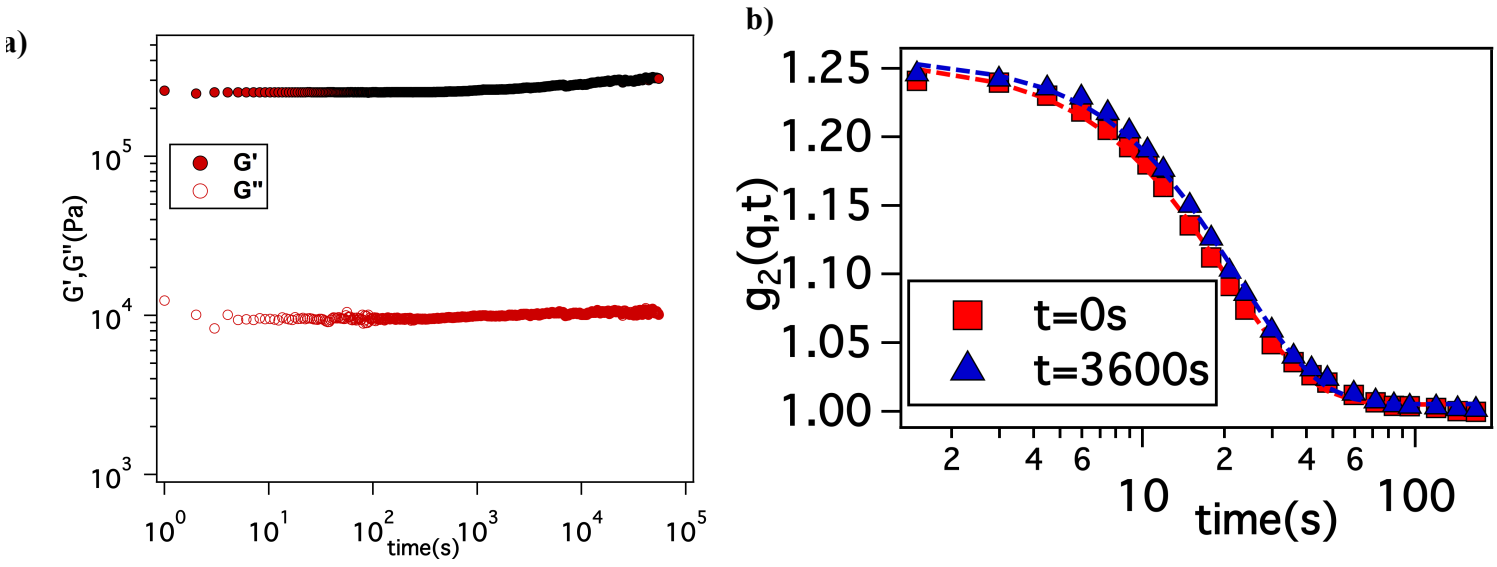

Figure S5 a) Variation of G′ and G″ as a function of time after preshear by strain sweep. **b)** Comparison of $g_2(q,t)$ measured initially and after 3600s for x_L=0.4 at q~0.22nm^{-1}. Since the moduli and the $g_2(q,t)$ do not change with time, it indicates absence of any aging in the system.

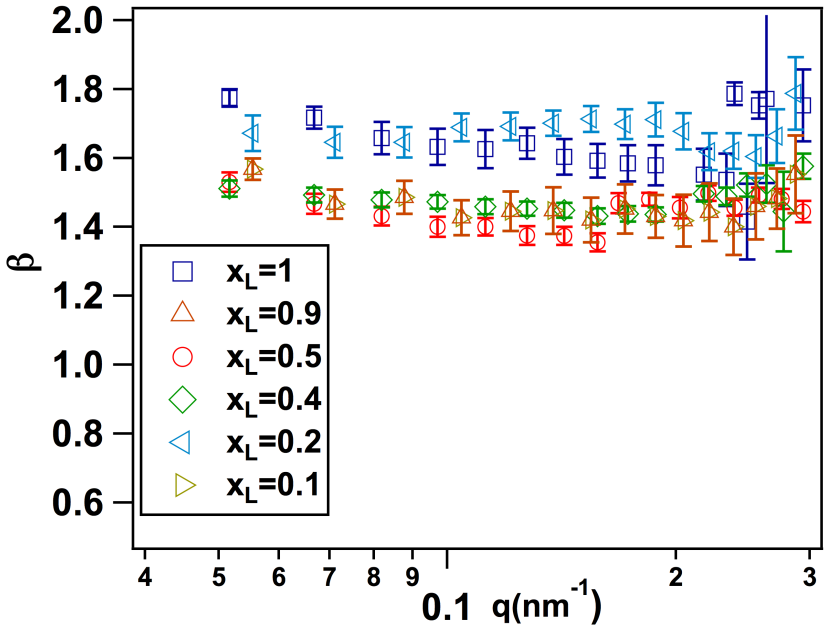

Figure S6. Variation of stretching exponent, β with wave vector q at different x_L values.

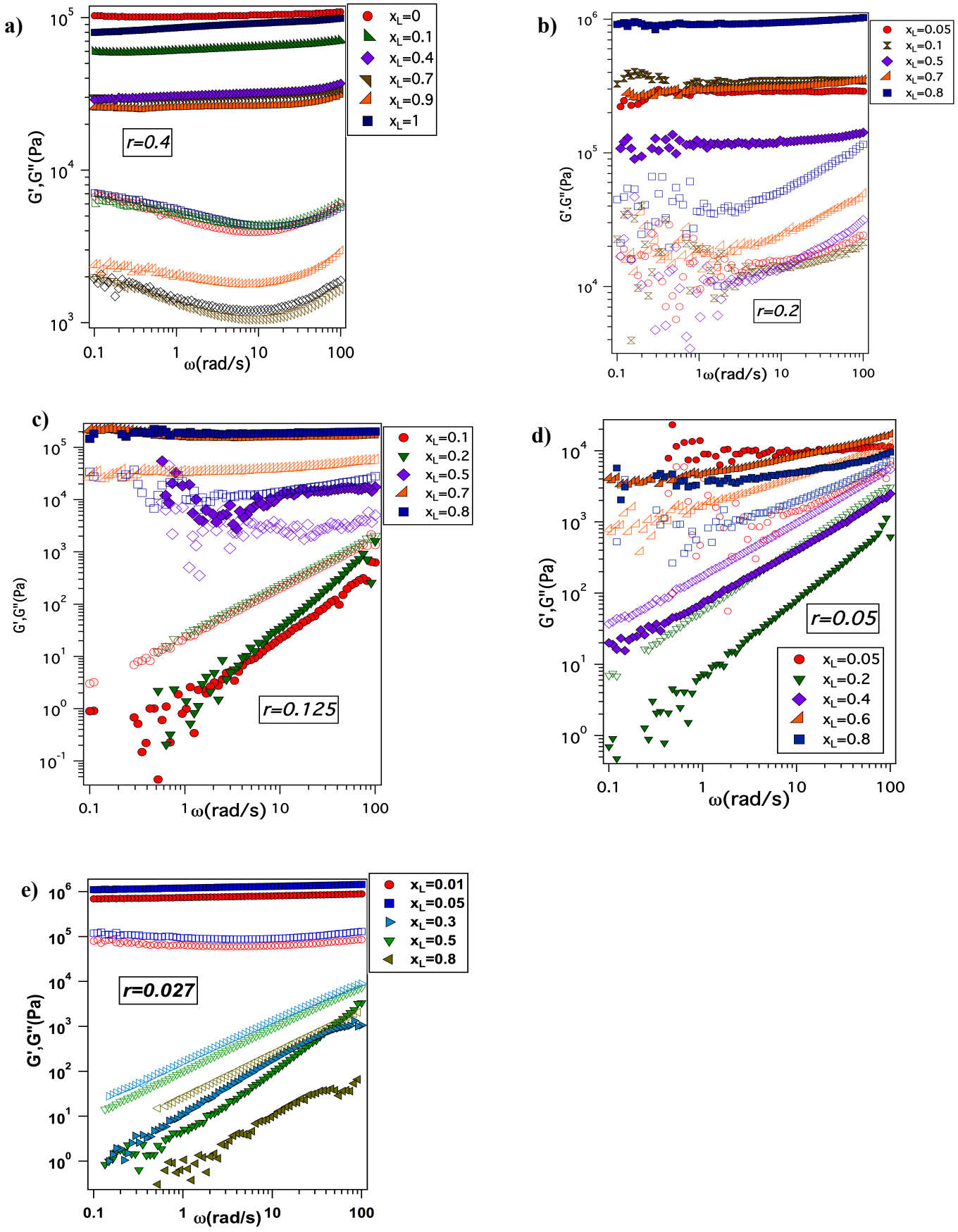

Figure S7. Storage modulus G′(filled symbols) and loss modulus G″(open symbols) as a function of angular frequency ω at a strain of $\gamma = 0.5\%$ at different values of x_L for **a)** $r = 0.4$, **b)** $r = 0.2$, **c)** $r = 0.125$, **d)** $r = 0.05$ and **e)** $r = 0.027$.

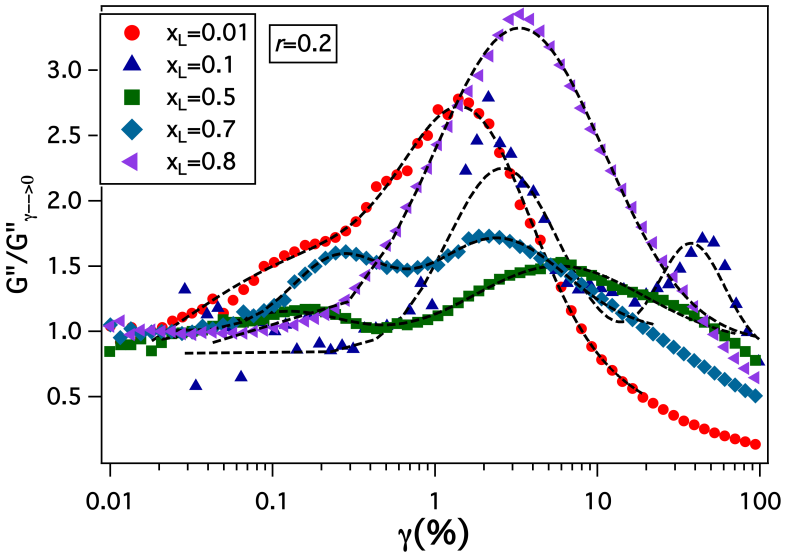

Figure S8. Normalized loss modulus, $G''/G''_{\gamma\to 0}$ at ω =10rad/s with lognormal fits (dotted lines) for *r = 0.2*