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(38) The distribution of segregated domains in the cubic cell was analyzed using the following mathematical equation for the isosurfaces (from refs 34 and 37): $\cos(2\pi x) + \cos(2\pi y) + \cos(2\pi z) - \cos(2\pi x)\cos(2\pi y)\cos(2\pi z) = \beta$, where variables x , y and z refer to the unit cell normed to 1, and β defines the successive isosurfaces, starting from $\beta = 0$, for the approximation of the IPMS of type P , up to $|\beta| = 2$ on edges and vertices. The curvature regularly increases with $|\beta|$, while the isosurface area in the normed cell, A , simultaneously shrinks from 2.35 on IPMS to 0 on the edges. Isosurfaces β are hypothesized to coincide with domain boundaries when the volume fractions ($X_v/2$) separating them from the IPMS accord with the real volume of segments. The distribution of interfaces is therefore determined by these volume contributions and by the relation between β , X_v and A (Figures S9 and S10). The latter was obtained by numeric integration over cell volume and over membranes going through isosurfaces. The ratio of the isosurface area in the real cell a^2A and of the number of molecules per cell a^3/V_{mol} gives access to areas per segment that can be compared to natural cross-sections.

(39) Mesogens/aliphatic interfaces ($[\mathbf{P}_2 \subset \mathbf{1}][\text{DOS}]_4$: $X_v \approx 0.31$, $|\beta| \approx 1.44$, $A = 1.92$; $[\mathbf{P}_3 \subset \mathbf{1}][\text{DOS}]_4$: $X_v \approx 0.28$, $|\beta| \approx 1.30$, $A = 2.015$) and dendritic/aliphatic interfaces ($[\mathbf{P}_2 \subset \mathbf{1}][\text{DOS}]_4$: $X_v \approx 0.44$, $|\beta| \approx 1.89$, $A = 1.21$; $[\mathbf{P}_3 \subset \mathbf{1}][\text{DOS}]_4$: $X_v \approx 0.41$, $|\beta| \approx 1.80$, $A = 1.47$).