Supporting Information

Organic-Inorganic Hybrid Bent-Core Liquid Crystals with Cubic Silsesquioxane Cores

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GPC Traces of POSS-8BC and POSS-8SiBC. The structures and purities of POSS-8BC and POSS-8SiBC are further characterized by gel permeation chromatography as shown in Fig. S1. GPC traces of the samples are symmetrically narrow, and they have larger elution volumes than Q8M8H.

Fig. S1  GPC traces of POSS-8BC, POSS-8SiBC, and Q8M8H.
\textbf{\textsuperscript{1}H NMR Spectra.} Chemical structures of POSS-8BC, POSS-5BC, and POSS-8SiBC are confirmed with \textsuperscript{1}H NMR as shown in Fig. S2, S3, and S4. \textsuperscript{1}H NMR spectrum of POSS-3.5BC is similar to that of POSS-5BC, except that integral of peak \( h \) is larger.
Fig. S3 $^1$H NMR spectrum of POSS-5BC.

Fig. S4 $^1$H NMR spectrum of POSS-8SiBC.
2D WAXD patterns of POSS-5BC and POSS-3.5BC. Liquid Crystalline phase structures of POSS-5BC and POSS-3.5BC were studied by 2D WAXD as shown in Fig. S5a and S5b, respectively. For both patterns, three pairs of diffraction arcs with scattering vector ratio of 1:2:3 appear on the meridian, and two pairs of scattering halos are located in the quadrants in the high-angle region. They are patterns of SmC phases.

Fig. S5  2D WAXD patterns of POSS-5BC (a) and POSS-3.5BC (b) when X-ray beam is perpendicular to the shear direction.