

Long-Range-Order Supramolecular Alignment of Helical Poly(disulfide)s in Liquid Crystals

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Supramolecular polymerization in organic phase, especially in liquid crystals, is fundamentally attractive due to the subtle interplay and dynamic interactions between (supra)molecular entities and liquid-crystalline mesogens.¹⁻³ Here we show the long-range-order supramolecular alignment of helical poly(disulfide)s in nematic liquid-crystalline mesogens, reaching centimeter-long, anisotropic, paralleled organization with dynamic behaviors.⁴ Molecular engineering studies indicate the decisive factor of balancing polymer-polymer interactions with polymer-mesogen compatibility. Fluorescent labeling experiments verify the supramolecular polymeric nature of the observed macroscopic aligned architectures. This work offers a self-organization pathway to long-range-order supramolecular materials with dynamic and adaptive features.