

Abstract Submitted
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Molecular engineering of colloidal liquid crystals using DNA origami MAHSA SIAVASHPOURI, Brandeis Univ, CHRISTIAN WACHAUF, Technische Universitat Munchen, MARK ZAKHARY, Brandeis Univ, FLORIAN PRAETORIUS, HENDRIK DIETZ, Technische Universitat Munchen, ZVONIMIR DOGIC, Brandeis Univ — Understanding the microscopic origin of cholesteric phase remains a foundational, yet unresolved problem in the field of liquid crystals. Lack of experimental model system that allows for the systematic control of the microscopic chiral structure makes it difficult to investigate this problem for several years. Here, using DNA origami technology, we systematically vary the chirality of the colloidal particles with molecular precision and establish a quantitative relationship between the microscopic structure of particles and the macroscopic cholesteric pitch. Our study presents a new methodology for predicting bulk behavior of diverse phases based on the microscopic architectures of the constituent molecules.

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