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Quantum Anomalous Hall Effect in 2D Organic Topological Insulators[1] ZHENGFEI WANG, ZHENG LIU, FENG LIU, Department of Materials Science and Engineering, University of Utah — Quantum anomalous Hall effect (QAHE) is a fundamental transport phenomenon in the field of condensed-matter physics. Without external magnetic field, spontaneous magnetization combined with spin-orbit coupling give rise to a quantized Hall conductivity. So far, a number of theoretical proposals have been made to realize the QAHE, but all based on inorganic materials. Here, using first-principles calculations, we predict a family of 2D organic topological insulators (OTIs) for realizing the QAHE. Designed by assembling molecular building blocks of triphenyl-transition-metal compounds into a hexagonal lattice, this new classes of organic materials are shown to have a nonzero Chern number and exhibit a gapless chiral edge state within the Dirac gap.

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