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A Microfluidic Route to Breaking Chiral Symmetry: Theory and Experiment SAMUEL OCKO, Stanford University, LAURA ADAMS, Harvard University — A robust route for the biased production of single handed chiral structures has been found in generating non-spherical, multi-component double emulsions using glass microfluidic devices. The specific type of handedness is determined by the final packing geometry of four different inner drops inside an ultra-thin sheath of oil. Before the three dimensional chiral structures are formed, the quasi-one dimensional chain of four inner drops re-arranges in two dimensions into either checkerboard or stripe patterns. We derive an analytical model predicting which pattern is more likely and assembles in the least amount of time. Moreover, our model accurately predicts our experimental results and is based on local bending dynamics, rather than global surface energy minimization. We gratefully acknowledge Professors D. Weitz and L. Mahadevans support.

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