Reconfigurable self-assembly through chiral control of line tension

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We have investigated the assembly of rod-like molecules into 2D colloidal membranes consisting of a monolayer of aligned colloidal rods. Computer simulations demonstrate that the rods at the edge of the membrane spontaneously tilt in order to minimize surface tension. Increasing chirality of constituent rods reduced the line tension of the edge. For sufficiently chiral rods the line tension can be reduces all the way to zero. At this point the membrane becomes ustable and spontaneously transforms into one-dimensional twisted ribbons.