Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Chiral Control of Interfacial Tension MARK ZAKHARY, THOMAS GIBAUD, EDWARD BARRY, ROBERT MEYER, ZVONIMIR DOGIC, Brandeis University — The interfacial tension between molecular species in self-assembling systems plays a crucial role in determining the physical properties of the mesoscopic assemblages. The predominant method for controlling interfacial tension is the addition of surfactant molecules, which preferentially adsorb onto the interface and modify the interactions between the two phases. In this talk, using a model colloidal membrane composed of chiral, rod-like *fd* viruses, I will present a new method for controlling interfacial tension which does not require additional surfactant components, but instead utilizes the intrinsic chirality of the constituent rods. I will demonstrate that chirality can be used to continuously tune the interfacial tension of a membrane and to drive a dramatic phase transition from two-dimensional membranes to one-dimensional twisted ribbons. Using a wide variety of microscopic techniques, this transition is characterized over all relevant length-scales, ranging from nanometers to microns.

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Date submitted: 18 Nov 2010 Electronic form version 1.4