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Thermodynamic properties of planar membranes: applications to stripped phases FRANCISCO J. SOLIS, Integrated Natural Sciences, Arizona State University, CHLOE FUNKHOUSER, KATSUYO THORNTON, Materials Science and Engineering, University of Michigan — Multicomponent membranes can have shapes that are planar at large length scales while retaining complex morphologies at smaller scales. We explore the properties of these membranes that arise from the planarity condition. We show that planarity requires that the average stress tensor of the membrane be parallel to the planar directions. We apply this description of planar membranes to the case of striped (lamellar) morphologies. In this case we determine the possible shapes of membranes, their stability and the thermodynamic equations of state satisfied by their intensive variables.

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