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Keith Promislow* (kpromisl@math.msu.edu), Department of Mathematics, C212 Wells Hall, East Lansing, MI 48824, and **Qiliang Wu**. *Dynamics and Bifurcation of Multicomponent Amphiphilic Membranes*.

Polymer chains are typically hydrophobic, the addition of functional groups to the backbone adds regions of hydrophilicity. The amphiphilic material (both hydrophobic and hydrophilic) has a strong affinity for solvent, imbibing it to self assemble charge-lined networks which serve as charge-selective ion conductors in a host of energy conversion applications. We present a continuum model for the free energy of an amphiphilic mixture. The associated gradient flows admit dynamic competition between network morphologies of distinct co-dimension. We present a model for multicomponent amphiphilic mixtures that permits competitive geometric evolution for co-dimension 1 bilayers and co-dimension two pore morphologies, present an analysis of the associated spectral problems, and describe rigorous existence results for pearled morphologies. (Received September 05, 2015)