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**Bile Salt Mediated Growth of Reverse Wormlike Micelles in Non-polar Liquids** SHIH-HUANG TUNG, YI-EN HUANG, SRINIVASA RAGHAVAN, Department of Chemical and Biomolecular Engineering, University of Maryland, College Park, MD 20742 — We report the growth of reverse wormlike micelles induced by the addition of a bile salt in trace amounts to solutions of the phospholipid, lecithin in nonpolar organic solvents. Previous recipes for reverse wormlike micelles have usually required the addition of water to induce reverse micellar growth; here, we show that bile salts, due to their unique “facially amphiphilic” structure, can play a role analogous to water and promote the longitudinal aggregation of lecithin molecules into reverse micellar chains. The formation of transient entangled networks of these reverse micelles transforms low-viscosity lecithin organosols into strongly viscoelastic fluids. The zeroshear viscosity increases by more than five orders of magnitude, and it is the molar ratio of bile salt to lecithin that controls this viscosity enhancement. The growth of reverse wormlike micelles is also confirmed by small-angle neutron scattering (SANS) experiments on these fluids.

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