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Formation of Vesicles in Lipid – **Liquid Crystal Colloidal Mixtures** JEFFREY PETERS, GERMANO IANNACCHIONE, Worcester Polytechnic Institute — The formation and phase ordering / evolution has been studied in lipid and liquid crystal (LC) colloidal mixtures as a function of LC concentration and thermal history. The lipid used was 2-oleoyl-1-palmitoyl-sn-glycero-3-phosphocholine (POPC) while the liquid crystal was pentylcyanobiphenyl (5CB). POPC is a naturally occurring lipid in eukaryotic cell membranes and mimics many of the properties of human cell walls. 5CB is a polar liquid crystal that exhibits a thermodynamically stable orientationally ordered (nematic) state at room temperature. Colloidal dispersions were made at various 5CB and POPC concentrations in water and studied via optical microscopy (phase contrast, confocal, florescence, and cross-polarizing) to probe phase order and evolution as well as by calorimetry to study phase transformations. Very large vesicles were observed to form that appear to use 5CB droplets as scaffolds as well as a unique promotion of lipid crystallization within defect regions of nematic domains.

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