## Abstract Submitted for the MAR11 Meeting of The American Physical Society

Stimuli-Responsive Peptide-based Triblock and Star Copolymers JACOB RAY, SANDEEP NAIK, ASHLEY JOHNSON, JACK LY, DANIEL SAVIN, School of Polymers and High Performance Materials, University of Southern Mississippi — Stimuli-responsive copolymers demonstrate diverse aggregation behavior in aqueous solution. In general, the molecular architecture and the balance of hydrophilic and hydrophobic volumes influence morphology. This study involves polypeptide-based ABA linear triblock and AB2 star copolymer (which structurally resemble phospholipids) amphiphiles. Model systems for this study are poly(L-lysine)-b-poly(propylene oxide)-b-poly(L-lysine) (KPK) triblocks and poly(L-glutamate) (PE) based star copolymers. Extensive studies with KPK systems have resulted in morphological transitions by modifying pH, and we hypothesize that a change in individual chain conformation is the driving force for these transitions. Preliminary results for PE-based star copolymers with various hydrophobic moieties suggest polymersome (vesicle) formation. Light scattering (dynamic and static) and TEM were used to determine aggregate size and morphology as a function of pH; furthermore, circular dichroism (CD) spectroscopy was used to measure helix-to-coil transitions of the polypeptide blocks.

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