Abstract Submitted
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Self Assembly of Temperature-Sensitive Capsules using PNIPAm Microspheres[1] D. B. LAWRENCE, University of Massachusetts Amherst Physics, T. CAI, Z. B. HU, University of North Texas, M. MARQUEZ, INEST Group, Phillip Morris USA, A. D. DINSMORE, University of Massachusetts Amherst Physics — We present a method for self assembly of novel semi-permeable capsules (colloidosomes) exhibiting temperature-dependent size and surface properties. These hollow micro-capsules are composed of micron-sized PNIPAm-co-acrylic acid particles that exhibit a reversible size transition at 32^{o}C. The PNIPAm particles self-assemble at the spherical interface between 2-Octanol and water droplets. Electrostatic cross-linking with the di-block copolymer Poly(butadiene-b-N-methyl 4-vinyl pyridinium iodide) locks the particles in place, forming a rigid, elastic membrane that remains after the 2-Octanol/Water interface is removed. Such self-assembled capsules retain the temperature sensitivity of the PNIPAm particles from which they are constructed, and exhibit reversible size transitions. Controlled variation of the permeability and potential applications in controlled release will be discussed.

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