

Abstract Submitted
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Material characterization of poly-lactic acid shelled ultrasound contrast agent and their dynamics¹ SHIRSHENDU PAUL, DANIEL RUSAKOW, TYLER RODGERS, KAUSIK SARKAR, University of Delaware, MICHAEL COCHRAN, MARGARET WHEATLEY, Drexel University — Micron-size gas bubbles encapsulated with lipids and proteins are used as contrast enhancing agents for ultrasound imaging. Biodegradable polymer poly-lactic acid (PLA) has recently been suggested as a possible means of encapsulation. Here, we report *in vitro* measurement of attenuation and scattering of ultrasound through an emulsion of PLA agent as well as theoretical modeling of the encapsulated bubble dynamics. The attenuation measured with three different transducers of central frequencies 2.25, 3.5 and 5 MHz, shows a peak around 2-3 MHz. These bubbles also show themselves to possess excellent scattering characteristics including strong non-linear response that can be used for harmonic and sub-harmonic contrast imaging. Our recently developed interfacial rheological models are applied to describe the dynamics of these bubbles; rheological model properties are estimated using measured attenuation data. The model is then applied to predict nonlinear scattered response, and the prediction is compared against experimental observation.

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