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**Generation and acoustic characterization of monodisperse lipid-coated microbubbles** MIGUEL A. PARRALES, JUAN M. FERNANDEZ, MIGUEL PEREZ-SABORID, Dept. Ingenieria Aeroespacial y Mecanica de Fluidos, Universidad de Sevilla, Spain — The acoustic attenuation spectrum for different lipid-coated microbubble suspensions was measured in order to characterize the linear acoustic behavior of ultrasound contrast agents. For that purpose, microbubbles were generated with a very narrow size distribution by using microfluidics techniques operated at two different regimes: flow-focusing and co-flow. We show that monodisperse agents optimize the acoustic echo response by narrowing the attenuation spectrum, which presents a maximum peak for a frequency value corresponding to that of the single bubble resonance. In consequence, the low polydispersity index of our samples increases the accuracy in the estimation of the lipid shell viscoelastic properties. As it has been reported, the non-linear behavior of the coating makes the viscoelastic parameters to change with the equilibrium bubble radius. Our experimental procedure permits the acoustic measurements to be acquired for virtually single-sized suspensions of bubbles, thus reducing the uncertainty in the estimation when using samples with a broad size distribution. The results show the great advantage of dealing with monodisperse populations rather than polydisperse for the acoustic characterization of ultrasound contrast agents.

Miguel A. Parrales
Dept. Ingenieria Aeroespacial y Mecanica de Fluidos,
Universidad de Sevilla, Spain

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