

Abstract Submitted
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Bubble Dynamics in Bubbly Medium J. MA, C.-T. HSIAO, G.L. CHAHINE, DYNAFLOW, INC — We present here a two-way coupled euler-lagrange model to study the dynamics Of a primary bubble oscillating in a bubbly mixture. The model simulates the Mixture medium by solving the N-S equations with a moving grid method to Track the motion of the primary bubble wall, while it models the surrounding Small bubbles with the R-P-K-H equation. The two-way coupling between them Is realized through the local mixture density due to the volume change and Motion of the dispersed bubbles. The simulations indicate the surrounding Bubbles absorb the energy radiated from the primary bubble thus reducing Both its maximum radius and period. The dynamics of the surrounding bubbles Result in a phase-shifting between density and pressure waves through the Medium. This is not captured by other analytical solutions assuming Homogeneous medium. Simulations considering the gravity successfully capture The interaction of the small bubbles with and their entrainment into the jet created by the primary bubble. All observations are in good agreements with Experiments of spark generated bubbles in bubbly media.

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