3D Microbubble Dynamics in a Weakly Viscous Fluid Near a Rigid Boundary Subject to Ultrasound

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Abstract : This paper investigates microbubble dynamics subject to ultrasound in a weakly viscous fluid near a rigid boundary. The phenomenon is simulated using a boundary integral method. The weak viscous effects are incorporated into the model through the normal stress balance across the bubble surface. The model agrees well with the Rayleigh-Plesset equation for a spherical bubble for several cycles. The effects of the fluid viscosity in the bubble dynamics are analyzed, including jet development, centroid movement and bubble volume.
Keywords : microbubble dynamics, bubble jetting, viscous effect, boundary integral method