

Abstract Submitted
for the DFD20 Meeting of
The American Physical Society

Time-Resolved X-ray Radiography of Bubble Bifurcation in a Vibrated, Closed, Liquid-Filled Cylinder¹ BENJAMIN HALLS, DAYNA OBE-NAUF, JOHN TORCZYNSKI, Sandia National Laboratories — Time-resolved quantitative mass distribution measurements were performed on a partially liquid-filled cylinder affixed to a vibration stage using x-ray radiography. A high-flux rotating anode x-ray tube source was used to image the multiphase dynamics inside the polycarbonate cylinder without interruption from the liquid–gas interfaces. The spectral response of the x-ray imaging system (~ 5 –150 keV) was modeled, and the recorded radiographs were converted to path lengths of the working fluid, PDMS oil. The parameters investigated included oscillation frequency, oscillation amplitude, liquid viscosity, and initial gas volume fraction in the cylinder. SNL is managed and operated by NTESS under DOE NNSA contract DE-NA0003525. SAND2020-7887 A

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Date submitted: 02 Aug 2020

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