

Abstract Submitted
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The dependence of Mesler entrainment on Weber number and drop axis ratio J.R. SAYLOR, B.H. MILLS, F.Y. TESTIK, Clemson University — The impact of a water drop on a flat water surface can result in a variety of subsurface bubble formation events. Under certain conditions, the impact results in the formation of a large number of micron-scale bubbles, often referred to as Mesler entrainment. An experimental study is presented revealing that the existence of Mesler entrainment depends on both the drop Weber number and the drop axis ratio. Specifically, Mesler entrainment was observed for Weber numbers greater than 8 and less than 26. Within this range, the occurrence of Mesler entrainment was more frequent for axis ratios close to unity, that is for spherical drops. Drops of a prolate or oblate shape showed significantly less frequent Mesler entrainment. The working fluid for all experiments was water with a constant concentration of the soluble surfactant Triton X-100. This was done to avoid the influence of contaminating surfactants which tend to accrue when pure water is used as the working fluid.

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