

Abstract Submitted
for the DFD05 Meeting of
The American Physical Society

The bubble caught under a drop impacting onto a solid surface K.

TAKEHARA, Kinki University, Japan, S.T. THORODDSEN, National University of Singapore, T.G. ETOH, Kinki University, Japan — We report ultra-high-speed images of the small bubble caught under a drop impacting onto a dry acrylic plate, over a range of impact Reynolds numbers between 5-30,000. The imaging is through the acrylic plate at frame rates up to 200,000 frames/s. We observe a thin disc of air caught under the center of the drop, which quickly contracts into a central bubble. The radius of the air disc reduces exponentially in time, contracting in as little as 60 μ s. The initial thickness of the air disc is in the range 1-2 μ m. The initial diameter of the disc is related to the bottom radius of curvature of the drop, as it impacts the plate. The initial diameter of the air disc is often marked by a ring of micro-bubbles which are left behind. The dynamics of the contraction does in some cases leave a small droplet at the center of the air bubble.

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Date submitted: 09 Aug 2005

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