

Abstract Submitted
for the DFD12 Meeting of
The American Physical Society

Drop impact on a non-miscible liquid HENRI LHUISSIER, CHAO SUN, ANDREA PROSPERETTI, DETLEF LOHSE, University of Twente, POF — The impact of a drop on a deep liquid bath is well-known to transiently open a crater in the bath and possibly eject a liquid sheet and a jet. For non-miscible drop and bath liquids at impact the drop can fragment and disperse into a collection of non-coalescing daughter drops. At impact the drop flattens, spreads at the crater surface and reaches a maximal deformation, which gets larger with increasing impact velocity, before surface tension drives its recession. This recession can promote the fragmentation by two different mechanisms: At moderate impact velocity, the drop recession converges to the axis of symmetry to form a jet which then fragments by a Plateau-Rayleigh mechanism. At higher velocity the edge of the receding drop destabilizes and shapes into ligaments which subsequently fragment. For this later mechanism, the dependence of the critical velocity for fragmentation on the bath viscosity and the number and size distribution of the daughter drops as a function of impact velocity will be discussed.

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Date submitted: 23 Jul 2012

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