

Abstract Submitted
for the DFD14 Meeting of
The American Physical Society

Vapor explosions during the impact of molten tin droplets into a liquid pool NADIA KOURAYTEM, ER QIANG LI, SIGURDUR THORODDSEN, King Abdullah University of Science and Technology — High-speed video imaging is used to study the impact of a molten tin droplet into a liquid pool. Three different regimes have been identified as nucleation boiling, film boiling or vapor explosion. The latter generally comprises two stages; during the first stage, vapor gets entrapped into the molten tin drop and then, at a second stage, the vapor is superheated by the tin material, creating a violent expansion (explosion). It was observed that the addition of surfactant to the fluid pool could promote the explosion and make it occur at a lower temperature. Furthermore, other parameters such as the pool liquid surface tension, boiling temperature, viscosity and molten tin temperature have been varied to examine the explosion dynamics.

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Date submitted: 29 Jul 2014

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