

Abstract Submitted
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Evolution of damage pattern for tin between 18 and 34 GPa

CHRISTOPHE VOLTZ, FRANÇOIS BUY, CEA — In order to investigate Tin damage and spall, under release wave, shock compression measurements have been carried out in the vicinity of melting curve, up to 34 GPa peak stress. The Asay window technique has been used to characterize spall layers. Both Tin surface and LiF window velocities have been recorded using visar and Doppler laser interferometry measurements techniques. We aimed to point out the influence of phase transitions on the damage behavior between solid and liquid states. Therefore we performed 4 experiments where Tin is submitted to a Taylor wave loading. According to the shock pressure level in the vicinity of the free surface, the material remains solid, melts partially or totally. This paper presents experimental results. The velocimetry curves recorded at Tin/LiF interface presents profiles with more regular shape according to higher molten fraction. We find a fairly good agreement between velocity profiles measurements and calculations performed on a hydrocode, using a multiphase equation of state in the field of low density domain.

Christophe Voltz
CEA

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