

Abstract Submitted  
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**Soda-lime glass behavior under laser shock** DIDIER LOISON, JEAN PIERRE GUIN, JEAN CHRISTOPHE SANGLEBOEUF, MARIETTE NIVARD, Institut de physique de Rennes UMR CNRS 5162, EMILIEN LESCOUTE, ARNAUD SOLLIER, cea/dam, LAURENT BERTHE, PIMM UMR CNRS 8006, MICHEL BOUSTIE, Institut Pprime UPR 3346 — Understanding and modeling the glass behavior is an issue for certain aeronautical, military and civil applications. For example, parts of satellites and shuttles are made of glass. During their lifetime, they are subjected to high velocity impacts, which in the end may damage them. To determine the behavior of these structures during and after impact we used instrumented laser driven shock loading performed on high power intensity Laser facilities: Transverse shadowgraphs of the front wave propagating inside the transparent material were taken at different times. They provide information regarding the position of the shock wave front and of the first damage. PDV or VISAR measurements provide time-resolved free surface velocity to determine mater velocity when shock wave breakout and spall strength for the most powerful laser shots. Under High pressure conditions glass permanently densify, traces of such a plastic deformation are looked for on the path of the shock wave. Those experimental data are necessary to characterize the material behavior under such conditions and to model the mechanical behavior of glass structures. In this presentation we will present experimental results obtained for soda-lime silica glass samples loaded by laser induced shock.

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