

Abstract for an Invited Paper  
for the SHOCK11 Meeting of  
The American Physical Society

### **Dynamic Strength of Materials**

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Historically when shock loading techniques became accessible in the early fifties it was assumed that materials behave like fluids implying that materials cannot support any shear stresses. Early and careful investigation in the sixties by G. R. Fowles in aluminum indicated otherwise. When he compared his Hugoniot compression measurements to hydrostatic pressure compression measurements in the pressure volume plane he noticed that the shock data lay above the hydrostatic compression curve – which laid the ground work for what is the basis for elastic-plastic theories that exist today. In this talk, a brief historical perspective on strength measurements in materials will be discussed including how time-resolved techniques have played a role in allowing estimates of the strength of materials at over Mbar stress. This is crucial especially at high stresses since we are determining values that are small compared to the loading stress. Even though we have made considerable progress in our understanding of materials, there are still many anomalies and unanswered questions. Some of these anomalies are fertile grounds for further and future research and will be mentioned.