Ellipsoidal Voids as a Trigger of Hot Spots in Solids MICHAEL GRINFELD, US Army Research Laboratory — A characteristic feature of solid agglomerates as compared with liquid energetic materials is the possibility of localization of dissipation and adiabatic heating in the vicinity of inhomogeneities, especially, at crack tips, sharp corners, etc. Inhomogeneities of macroscopic size can be modeled by using a continuum approach which allows studying the reversible and irreversible effects responsible for generating hot spots. We explore the effects of appearance of stress driven hot spots in a systematic quantitative way. A closed-form analytical solution is obtained for ellipsoidal inclusions in isotropic media. Our model shows that the rate of thermomechanical dissipation of work essentially increases around penny-shaped ellipsoids. The paper also discusses some engineering aspects of the use of two-phase energetic materials with optimized geometry and density of inclusions.