

Abstract Submitted  
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**Collapse of Hollow Cylinders of PTFE and Its Mixtures with Metal Particles Using Hopkinson Bar** JING CAI, VITALI F. NESTERENKO, University of California, San Diego — Hopkinson bar based thick walled cylinder (TWC) method was developed to collapse hollow cylinders made from Teflon and its mixtures with Al or Sn particles of different sizes (2 and 95 microns for Al and 44 microns for Sn particles). Different media (water, suspension of alumina particles in water, glycerol) in different geometry were investigated to ensure collapse of hollow cylinders under single pressure pulse achievable in Hopkinson bar. Only mixture of Teflon and small aluminium particles (2 micron) demonstrated the evidence of decomposition/reaction localized along shear bands in the form of dark residue. Raman spectrum of this residue demonstrated two peaks which were absent in Raman spectrum of C<sub>2</sub>F<sub>4</sub> monomer typical for the degradation of PTFE. This phenomenon was not detected under collapse of cylinders made from pure Teflon or from mixture of Teflon and large aluminium particles or in mixture of Teflon and Sn particles. This work was supported by ONR (N00014-02-1-0491).

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