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**Shock-induced initiation and energy release behavior of polymer bonded explosive materials** WEI ZHANG, XUANMING CAI, Harbin Institute of Technology, HYPERVELOCITY IMPACT RESEARCH CENTER TEAM — In this paper, an initially sealed vented test chamber and a test projectile with a recessed hole were designed to complete the experiments. As the initiation takes place on the interior, great amounts of thermo-chemical energy gases were vented through a hole formed by the penetration process. The gas pressure inside the chamber was used to evaluate the energy release behavior of polymer bonded explosive materials. The impact pressure of the projectile was measured by the PVDF sensors. Based on the earlier work that the constitutive equation of polymer bonded explosive materials was established, the impact pressure of the projectile was obtained through the numerical simulation. The experimental results reveal that the impact pressure is significant to the energy release behavior, and in some extent the gas pressure improves with the velocity of the projectile. The impact pressure obtained by the experiments is comparing with which obtained through the numerical simulation, and the results of the comparing is that the value of them are closely relative. The experimental results also indicate that the constitutive equation of polymer bonded explosive materials used in the numerical simulation can correctly describe the mechanical behavior of PBX materials.

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