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Experimental Investigation to the Damage Localization of PBX Mechanical Failure at Mesoscale

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Abstract: A compressive experiment of in situ of SEM was employed to study the heterogeneous mechanical failure behaviors of plastic bonded explosive containing TATB at mesoscale. Digital pictures of Specimen subjected to quasistatic compressive load were captured for calculating deformation fields and displacement vector fields by the help of digital image correlation algorithm. The vortex field of vectors around the tip of preset crack is observed and the final failure model of specimen obeys the axial splitting which shows the difference from the traditionally accepted point of shearing failure. The localization of damage is visualized via distribution patterns of deformation field and displacement vector field which are affected strongly by the pre-exit crack.

Key words: solid mechanics; polymer-bonded explosive; localization of damage; digital image correlation; axial splitting

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更　正

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