

14TH IAA SYMPOSIUM ON SPACE DEBRIS (A6)
Hypervelocity Impacts and Protection (3)

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EXPERIMENTAL STUDY OF THE CRYOGENIC EFFECT ON HYPERVELOCITY IMPACT
CHARACTERISTICS OF ALUMINUM ALLOY WHIPPLE STRUCTURE

Abstract

The cryogenic effect on hypervelocity impact characteristics of aluminum alloy whipple structure were carried out by two-stage light gas gun at the ambient temperature -100, -50 and 20, respectively. Based on the experiments results, the different features about the size of perforation hole, debris clouds shape, rear wall damage characteristic and the bumper protection capabilities were analyzed. The results showed that the protection capabilities of aluminum alloy Whipple structure at -100 was increased 12