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STUDY ON DEBRIS SHIELD STUFFED WITH AEROGEL/FIBERGLASS COMPOSITE

**Abstract**

Silica aerogel/fiberglass composite(SAFC) has good properties of low density, low cost, shock absorption, and heat insulation. Debris shield stuffed with SAFC was proposed and studied in the study. The shielding performances of the SAFC stuffed shield, aluminum triple-wall shield and basalt/Kevlar fabric stuffed shield with same areal density were investigated by hypervelocity impact test. The diameter of aluminum projectile was 5.5mm and the range of impact velocity was from 4.68km/s to 5.02km/s in the tests. With similar impact parameters, the test results showed that the shielding performance of the SAFC stuffed shield was better than that of aluminum triple-wall shield markedly, and similar to that of basalt/Kevlar fabric stuffed shield.

Key words: Space debris, Hypervelocity impact, Shield, Aerogel, Composite