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Macro-damage and deformed microstructure of depleted uranium impacted by steel projectile at different velocities¹ DONGLI ZOU, DAWU XIAO, YAWEN ZHAO, LIFENG HE, CHAO LU, China Academy of Engineering Physics — Macro-damage and deformed microstructure evolution of depleted uranium impacted by steel projectile at a velocity ranged from 10 m/s to 90 m/s was investigated by means of confocal laser scanning microscope, electron backscatter diffraction, transmission electron microscope and indenter technique. The experimental results show that the spherical cap craters were formed in depleted uranium target impacted by steel projectile under different impact velocities, and the crater diameter and depth increased linearly with impact velocities increasing. Microstructural observation shows that four deformed zones could be classified from crater rim to deep matrix, including twin fragmentation zone, high density deformation twin zone, low density deformation twin zone and matrix zone. Twinning was considered as a dominant plastic deformation mechanism of depleted uranium subjected to impact loadings, and the twins $\{130\}$ and $\{172\}$ were mainly distinguished and confirmed. Keywords: depleted uranium; high velocity impact; dynamic deformation

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Dongli Zou
China Academy of Engineering Physics

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