

Abstract Submitted
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Experimental study and structural scaling analysis of damage-failure transition in shocked Armco-iron¹ SERGEY UVAROV, OLEG NAIMARK, YURIY BAYANDIN, ELENA LYAPUNOVA, VLADIMIR OBORIN, ICMM UB RAS — Ballistic set-up (125mm gas gun) coupled with VISAR registration system has been developed for soft recovery plate impact test to investigate defect induced structure evolution and damage failure transition. Experiments were carried out at different impactor velocity and thickness of Armco-iron and Vanadium specimens. 3D New View profilometry and AFM study were used for structure investigation and roughness correlation technique was developed. It was found that for material far from spall surface the Hurst exponent is close to 0.5 which corresponds weakly correlated defects. In vicinity of spall surface the Hurst exponent is 0.6-0.7. More correlated behavior along several spatial scales can be considered as precursor of damage-failure transition.

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