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Dynamic Strength Ceramic Nanocomposites Under Pulse Loading[1] EVGENIYA G. SKRIPNYAK, VLADIMIR V. SKRIPNYAK, IRINA K. VAGANOVA, VLADIMIR A. SKRIPNYAK, Tomsk State University — Multi-scale computer simulation approach has been applied to research of strength of nanocomposites under dynamic loading. The influence of mesoscopic substructures on the dynamic strength of ceramic and hybrid nanocomposites, which can be formed using additive manufacturing were numerically investigated. At weak shock wave loadings the shear strength and the spall strength of ceramic and hybrid nanocomposites depends not only phase concentration and porosity, but size parameters of skeleton substructures. The influence of skeleton parameter on the shear strength and the spall strength of ceramic nanocomposites with the same concentration of phases decreases with increasing amplitude of the shock pulse of microsecond duration above the double amplitude of the Hugoniot elastic limit of nanocomposites.

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