

Abstract Submitted  
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**The influence of the admixture of the fullerene C<sub>60</sub> on strength properties of aluminum and copper under shock-wave loading** GALINA BEZRUCHKO, SERGEY RAZORENOV, Institute of Problems of Chemical Physics RAS, Chernogolovka, MIKHAIL POPOV, Technological Institute for Superhard and Novel Carbon Materials, Troitsk — Hugoniot elastic limit and dynamic (spall) strength measurements of pressed aluminum and copper samples with admixture of the fullerene C<sub>60</sub> by 2-5 wt % under shock-wave loading were carried out. The peak pressure in shock-wave is equal to 6 GPa. The measurements of elastic-plastic and strength properties were based on the recording and the following analysis of the sample free surface velocity histories, recorded with VISAR laser-Doppler velocimeter. It was found, that the admixture of 5 wt % fullerene in aluminum samples led to increasing of Hugoniot elastic limit for aluminum samples by a factor of ten. The copper samples with admixture of 2 wt % fullerene also demonstrated multiple increasing of the Hugoniot elastic limit in comparison with the commercial copper. The measured values of Hugoniot elastic limit were equal of 0.82-1.56 GPa for aluminum samples and 1.35-3.46 GPa for copper samples in dependence on their porosity. As it was expected, the spall strength of the samples with fullerene decreased about three times in comparison with the undoped samples as a result of influence of the solid fullerene particles which were concentrators of tension stresses in material in dynamic fracture process.

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