Abstract Submitted
for the SHOCK05 Meeting of
The American Physical Society

Dynamic behavior of microstructural copper BRAGOV ANATOLY, Head of Laboratory, D.Sc., PhD, LOMUNOV ANDREY, Senior Researcher, PhD —
Microcrystalline (grain size ∼100nm) copper of technical purity (99.98%), obtained at intensive plastic deformation by the method of equichannel angular pressing and oxygen-free copper (purity 99.99%) are investigated. The structure of metal after such processing has a high level of internal stresses. As a result of large plastic deformations in a sample the set of defects located near to borders of grains was formed. These borders on structure differ from borders of grains in usual copper: structure of such borders friable and wide, instead of thin, as at macrocrystalline copper. The dynamic loading of samples at compression by the Kolsky method was made in two directions: lengthways and across a plane of sliding. Some samples were subjected to thermal processing (annealing), at various temperatures. The nonlinear dependences of dynamic yield strength on annealing temperature are received. The qualitative model for explaining a change of yield strength in copper of technical purity and oxygen-free copper depending on time and preliminary annealing temperature is constructed.

Bragov Anatoly
Head of Laboratory, D.Sc., PhD

Date submitted: 13 Apr 2005 Electronic form version 1.4