

The invention relates to material testing, in particular to methods of deformation strengthening of surface layers of plastic materials. The method consists in that samples of material are statically loaded to different stages of deformation with additional exposure to set pulse loads, and after that the samples are unloaded. Prior to pulse loading the surfaces of the samples of materials are wetted with colloid solution of nano-particles of metals, or nano-particles of solid alloys, or nano-particles of carbides of metals, or nano-particles of metal nitrides, or colloid solution of solid non-metal nano-particles, with deposition of particles from solution to the surface of material by drying. The technical result is in formation of controlled surface nano-structured layer with given thickness, substantial strengthening of surface of material.