

Scientific Tracks - Day 1

Metal-Matrix composites reinforced by fullerenes

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The new method¹ of the metal matrix-carbon nanoparticles composite fabrication based on the high voltage electric discharge (HVED) treatment of the initially prepared powder is proposed. Proposed method of preparation of powders for consolidation differs from known methods by the fact that hardening particles are not mechanically added to powder mixture, but are instead synthesized during HVED treatment of "kerosene – Fe (Al) – Ti powder mixture" disperse system with its simultaneous grinding, which can be used for creation of composite materials with increased mechanical and performance characteristics. Raman spectra of obtained composites have shown presence of fullerenes C_{70} , as well as other allotropic forms of fullerenes, which allows us to predict strong mechanical properties (tribological and strength) and durability of these materials.

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