

August 23-25, 2018
Amsterdam, Netherlands

V A Levchenko et al., Nano Res Appl 2018, Volume: 4
DOI: 10.21767/2471-9838-C4-016

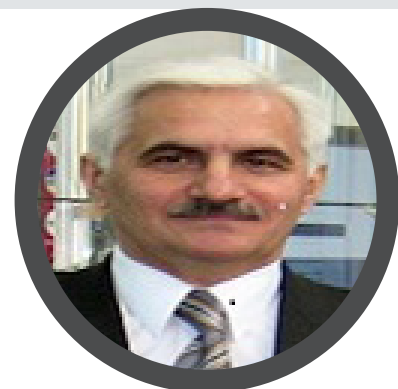
NANOSTRUCTURED COMPOSITE COATING ORIENTANTS IN TRIBO-ENGINEERING

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The work given briefly in report is on the history synthesis of new type nanocomposite with carbon materials having no analogues till now, which provides essential reducing of power losses in lubricated tribounits. Efficiency of these new carbon materials is based on the established work by us, of the fact that the carbon coatings with monocrystalline or polycrystalline highly ordered structures and linear chains of carbon increase essentially the level of molecular ordering in lubricating boundary layers and ensure adsorption of boundary layers on the coatings. Boundary layers repeat highly ordering structures presented by surface of the coating what results in improving lubricating ability, boundary layers thermal stabilization, extending the ranges of operating temperatures of oils, etc. Besides that, using the mentioned coatings allows lowering the number of additives in lube oils. A new type of functional materials of diamond like carbon (DLC) namely nanostructured coating-orientants and PVD process is developed to produce thick (DLC + AlTiN) coating on any metal or ceramic substrates. The new type of the functional materials has no analogues in triboengineering. The findings suggest that the nanocomposite coatings with orientating effect on boundary layers are advantageous for improving antifriction characteristics and for governing processes of boundary lubrication.



Biography

Vladimir Levchenko completed his Doctorate in Physics at the Lomonosov Moscow State University in 1988 and Doctoral studies at Lomonosov Moscow State University in 1999. He is the Director of Nanotribology centre LMSU – BIES RAS (Lomonosov Moscow State University – Blagonravov Institute of Engineering Science, Russian Academy of Sciences). CEO Skolkovo. He is Member of 8 international scientific societies. He has published 3 monographs and more than 220 papers in reputed journals and serving as an Editorial Board Member of repute. He is awarded by the international 4 Grand Prix and more than 40 gold medals for achievements in a science.

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