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Lubricating properties of nanoparticles and ionic liquid mixture

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Ionic liquids (IL) have shown impressive anti-wear and lubrication properties as compared with common lubrication oils in general use. ILs are suitable in extremely harsh friction conditions where high thermal stability and chemical inertness is required. In recent times different type of nanoparticles have gained much attention as anti-wear and extreme pressure additives to lubrication oils. Reasons behind this phenomenon include the remarkable tribological behavior of nanoparticles even at severe frictional conditions, and their self-repair capability to the worn surface, and good environmental-friendliness. The aim of the present study is to covalently functionalize carbon nanotubes (CNT) with IL via esterification reaction and therefore obtain improved dispersions of CNTs in IL. To the best of our knowledge this is the first report on the direct esterification of COOH functionalized CNTs with IL, other previously reported methods involve hazardous thionyl chloride and/or more synthesis steps. Also the applicability of carbon nanotube/IL composites as novel protective lubricating films for metal wear parts was investigated.

Biography

Rynno Lohmus did his PhD in physics Application of novel hybrid methods in SPM studies of nanostructural materials 2002. He is working as a Project manager for Estonian Nanotechnology Competence Centre (ENCC), & Senior Researcher at Institute of Physics, University of Tartu since 2005. He had published more than 43 publications in reputed journals.

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