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# International Conference on Trends in Nanotribology 2017 (TiN17)

**26 - 30 June 2017**

**ICTP, Miramare, Trieste, Italy**



UNIVERSITÀ DEGLI STUDI DI MILANO  
DIPARTIMENTO DI FISICA



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# CONTRIBUTED TALKS

# **The use of nanoparticles in the enhancement of the tribological properties of conventional lubricating oils**

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Superior tribological properties of nanolubricants have been recently well established for conventional oils, and enhancing the tribological performance of lubricants with nanoparticle additives is currently an active area of research. Recently scientists used nanoparticles in different tribological systems and nanolubricants have been widely studied as an alternative solution to conventional lubricant oils, since they allow obtaining significant reduction of friction and improvements of load-carrying capability. The action of nanoadditives reduces friction and wear on surfaces that operate in sliding contact with each other. Of particular interest are graphene and carbon based nanomaterials, such as Carbon Nanohorns (CNHs) and Carbon Nanotubes (CNTs). CNHs have been the subject of numerous studies due to their unique morphology and wide ranging properties of graphene, including chemical stability, low surface energy and high thermal and electrical conductivity. However, limited investigations were carried out on their tribological and anti-wear properties.

Herein, a summary about last studies carried out on different nanolubricant systems is presented. The enhancement of tribological properties of nanofluids containing CNHs is reported, that deals also with the differences in anti-friction and anti-wear capabilities of these systems, due to a variation of the surface topology of the substrate, in terms of roughness, and operating temperature. Nanofluids developed for different applications were selected, i.e. for refrigeration/air-conditioning sector and for automotive/cogeneration field.

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