

Nanoparticle and ionic liquid mixtures as lubricants

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When compared with commonly used lubrication oils, ionic liquids (IL) show impressive friction reducing and anti-wear properties. Furthermore due to their non-volatility, non-flammability, and thermo-oxidative stability, they are very suitable for tribological systems with harsh friction conditions [1]. In the last few years also nanoparticles (NP), for example Cu, CuO, ZnO were added to lubricating oils as anti-wear additives and extreme pressure additives [2]. They act as a lubricant film between the surfaces in contact to reduce adhesion and carry a part of the load [3].

In this study ILs and NPs were added to base oil. The tribological properties of the mixture were measured with the 4-ball method for Wear

Preventive Characteristics of Lubricating Fluid. With optical microscope wear scars were measured and coefficients of friction were determined.

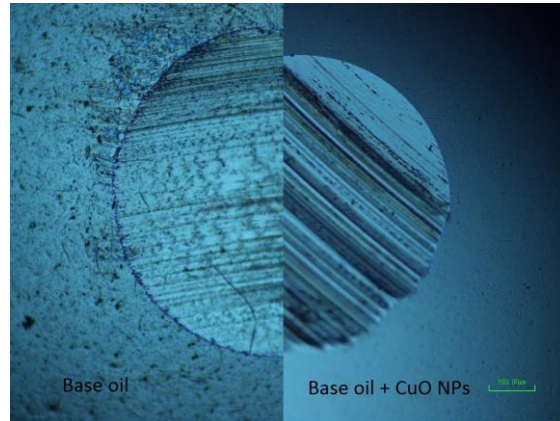


Fig.1 Comparison of wear scars measured with 4-ball method. On the left is the wear scar left by using base oil as lubricant and on the right is a wear scar left by base oil with CuO Nps as additives.

References

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2. L. Sun, J-F. Zhou, Z-J. Zhang, H-X. Dang. *Wear*, 256, 176-181 (2004).
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