nanoinfo

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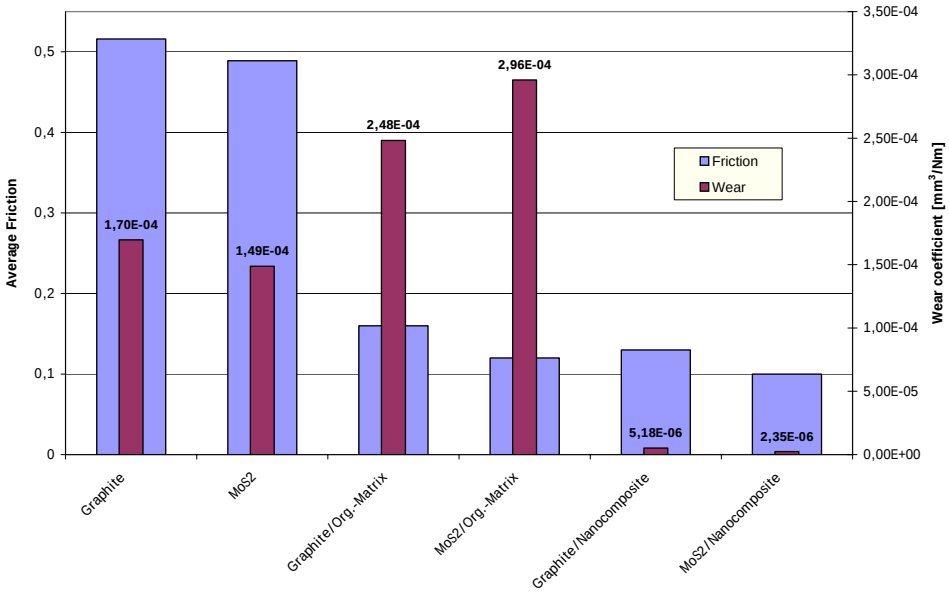
- **Lab technology**

Low friction coatings based on Nanocomposites



Picture:
Comparison of the tribological pairing stainless steel plate / 100Cr6-ball. The complexes of loads acting on the plate are:
Pin on Disc Tribometer
F = 2N; s = 1km;
V = 10 cm / s, r = 15 mm

The diagram presents the powdering of the plate with graphite / MoS_2, a sliding lacquer coating consists out of a polymer matrix and graphite / MoS_2 such as a nanocomposite with the desired solid state lubricants.

High efficiency in transmission processes can be only achieved by reducing the power loss which mostly appears as heat energy produced by friction processes. In combination with low maintenance requirements solid state lubricants are preferred. In contrast to hydrodynamic lubricants like oils and grease, solid state lubricants do not suffer from resinification or elutriation processes.

Compared with conventional low friction coatings mostly based on organic polymer matrices, the wear resistance could significantly be improved by the use of nanocomposite matrices without affecting the friction properties. The features of the novel nanocomposite low friction coatings are presented through following points:

- Friction coefficients of μ = 0.1 – 0.15 (comparable to PTFE)
- Wear coefficients of k = $5*10^{-6}$ – $2.3 * 10^{-6}$ mm^3/Nm
- Temperature stability: long term 250°C, 300°C short term
- Additional coating of components through spray / dip coating application followed by a thermal curing step
- Sufficient corrosion protection on metal substrates
- Coating of various metal or polymeric materials

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